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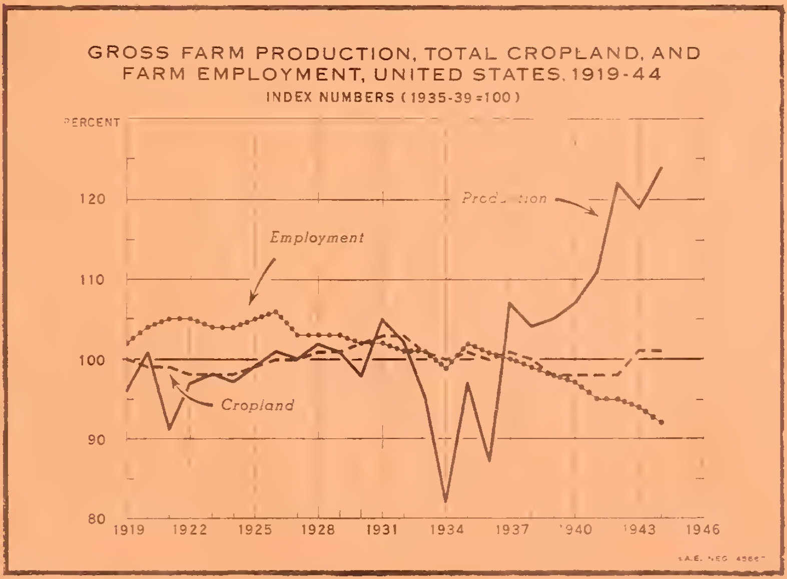
FARM PRODUCTION IN WAR AND PEACE



by Glen T. Barton
and
Martin R. Cooper

WASHINGTON, D. C.

DECEMBER 1945

FOREWORD

Marked increases in the volume of farm production have occurred in the war years. Most of the technological basis for this wartime expansion was built up in prewar years, and continued advance in technology will make possible further increases in production now that the war is over.

Wartime and prewar changes in farm production and production per worker are measured and analyzed in this report through the use of two newly developed indexes. This work was made possible by the availability of crop and livestock production data contributed by crop reporters, summarized by State and federal agricultural statisticians and released by the Crop Reporting Board.

The new indexes of gross farm production and farm output supplement the currently available Bureau of Agricultural Economics index of volume of agricultural production for sale and for consumption in the farm home, in two important respects:

(1) Since the first World War, a large part of the increase in the volume of farm products available for human use has resulted from the shift to buying mechanical power from the cities instead of producing animal power on farms. Farm-produced power of horses and mules has been included in the index of gross farm production so that changes in production per farm worker and the total contribution of crop and pasture land can be measured more precisely. The production-for-sale-and-home-consumption index does not include farm-produced power.

(2) Rather diverse regional trends are often obscured in national indexes. Therefore the gross-farm-production and farm-output indexes were constructed for each census geographic division as well as for the United States. The index of volume of production for sale and home consumption is available for the United States total only.

Sherman E. Johnson
Head, Division of Farm Management and Costs

FARM PRODUCTION IN WAR AND PEACE

By

Glen T. Barton, Agricultural Economist and
Martin R. Cooper, Agricultural Economist [1]

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FARMERS' WAR PRODUCTION RECORD

Farmers of the United States always have been quick to respond to the Nation's need for food. In World War I they produced much of the wheat that "won the war" and fed the liberated peoples of Europe. In World War II farmers increased tremendously the foods that were needed for our military and civilian populations, and produced large quantities of vital foods for shipment abroad under lend-lease.

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[1] Several members of the Bureau of Agricultural Economics helped in the development of the gross-farm-production and farm-output indexes. The late J. B. Shepard cooperated in planning the study and assisted in assembling basic data. Others who contributed are J. A. Becker, H. C. Norcross, R. D. Jennings, H. W. Hawthorne, A. P. Brodell, E. S. Kimball, J. L. Wilson, S. E. Johnson, S. W. Mendum, C. A. Gibbons, and Lois Nelson. R. W. Hecht furnished data on man-labor requirements. Ada M. Procise was largely responsible for the computations.

During World War II, production goals for several important products that called for phenomenal increases were met, or exceeded, with regularity as the war advanced. At the end of each war year after 1941 there had been produced more milk, more meat, more poultry, more eggs, more soybeans, more peanuts, more beans and peas—in short, more total food—than in any of the last 5 prewar years. By 1944, gross farm production was one-fourth more than in the prewar period 1935-39. Between 1939 and 1944 production increased twice as much as it did during the 20 peacetime years from 1919 to 1939.

In one way, it took the war emergency to develop our vast farm-production potential, just as it did to bring forth our tremendous industrial production. Increased production has been country-wide, but has been directed to meet the needs for specific products. Increases have been outstanding in the better farming areas, but have been by no means unimportant in the areas of less-favored production resources.

The production accomplishment seems all the more remarkable when measured in terms of crop acreages and number of farm workers. There were no more cropland acres during the war than there were during the period 1935-39. But much of the land was worked harder, more high-yielding crops were planted, more fertilizer and good seeds were used, and less land was summer fallowed. There were fewer farm workers during the war than before the war. And a higher percentage of the diminishing total as the war progressed was composed of women, children, and older men. But those who remained on the farms worked longer hours, worked more days, and were more generous in helping each other.

Vital as these developments have been there remains the very important influence of farm mechanization on food production for human consumption. The war period really represented the pay-off period, or the time when farmers were able to use to greatest advantage the large supplies of modern farm machines that were developed, and improved time and again, during the last 30 years. Although the wartime demand exceeded greatly the restricted supply of labor-saving farm machines, farmers as a whole had more tractors and tractor equipment than at any time in the history of the country. Numbers of grain combines, corn pickers, field silage harvesters, pick-up balers, side-delivery rakes, milking machines, and some other popular machines, are greater now than before the war. These helped immeasurably the depleted labor force to do the tremendous wartime farm production job well and in season.

The trend away from animal power to mechanical power on farms that started after World War I and has continued since that time has done more than merely to reduce farm-labor requirements—it has diverted land and other resources from the production of feed for horses and mules to the production of food for human consumption. Five million crop acres were thus released during the 5 war years alone; more than 50 million crop acres were released during the last 25 years.

This shift to mechanical power means that the job of producing farm power has become more and more a job for city workers instead of farm workers. It means that a measure of farm production which includes farm-produced power is considerably different from one that does not, since the latter measures changes in only that part of production that is utilized for food and other human use. Each type of measure has its particular significance.

MEASURES OF FARM PRODUCTION

This report uses two measures to describe and analyze changes in the volume and composition of farm production in war and peace. Gross farm production is a measure of the total product of United States farm land and farm labor resources in each calendar year. Farm output is a measure of the volume of farm production available for human use. These measures of production were developed by the use of annual index numbers which show percentage changes from the base period. Index numbers were constructed for each geographic division and the United States. Average 1935-39 farm prices were used as weights in combining annual production of individual farm products into the measures of total production. Since these same price weights were used throughout the 26-year period covered it is apparent that the production indexes change because of changes in the physical volume of the various farm products.

Farms in the United States produce many items that are used on farms in further production of products for human use. Examples of these farm "producer's goods" are feed grains, hay, and pasture used in producing meat and animal products; horses and mules for furnishing animal power for crop production and other farm work; seed for planting the succeeding year's crops; and fence posts and lumber for constructing and repairing farm improvements. But all, or a major part of most items, are produced directly for human use and are sold to nonfarm users or are consumed on the farm. Wheat, fruits and vegetables, meat, milk, and cotton are a few of the many farm products of this sort.

The index of gross farm production measures changes in the volume of production of both farm "producer's goods" and the output of products for human use. Total gross production thus includes all crop production, pasture consumed by all livestock, and the production of livestock and livestock products. Livestock and livestock products production, as used in this report, includes only the "product added" by livestock in the conversion of feed and pasture into livestock and livestock products for human use and into farm-produced animal power. 2/ Farm-grown livestock feed and

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2/ "Product added" by livestock was derived by subtracting the estimated value, at 1935-39 average prices, of feed and pasture consumed by each class of livestock from the total value, at 1935-39 average prices, of livestock and livestock products production.

Farm-produced power is the value, in 1935-39 average dollars, of the feed and pasture, labor, net depreciation, and other cost items devoted to the raising and maintenance of farm horses and mules. In the calculation of total gross farm production, farm-grown horse and mule feed and pasture were included in total crop production and the "product added" portion of farm-produced power was included in total livestock production.

pasture are included in total crop production and are thus counted but once in arriving at total gross farm production.

Lack of adequate data prevented the inclusion of several minor farm products in the measure of gross farm production. However, exclusion of these minor products, the more important of which are farm-forest products and green-house and nursery products, cannot greatly affect the indexes of gross farm production. The products included probably account for around 95 percent of total gross farm production.

Farm output, as used in this report, measures total gross farm production minus farm-produced power. Horse and mule feed and the product of farm labor and other resources used in raising and maintaining farm horses and mules are thus excluded. To construct an absolutely pure measure of farm output for a calendar year it would be necessary to exclude the production of several minor items of farm producer's goods, such as seed production, cottonseed used for fertilizer, and a part of breeding stock. Also sales to nonfarm users of farm-raised horses and mules should be counted as farm output. These calculations were impossible, however, with the information available. Their net effect upon the volume of farm output would be small in most years and annual changes shown by the index of farm output would be affected very little. Consequently, the measure of farm output used in this report, although not 100 percent perfect, does provide reasonably accurate national and regional measures of farm production for human use for each calendar year.

The steps followed in constructing the indexes of gross farm production and farm output, and a comparison of these indexes with the BAE index of volume of farm production for sale and use in the farm home are discussed later, beginning on page 55.

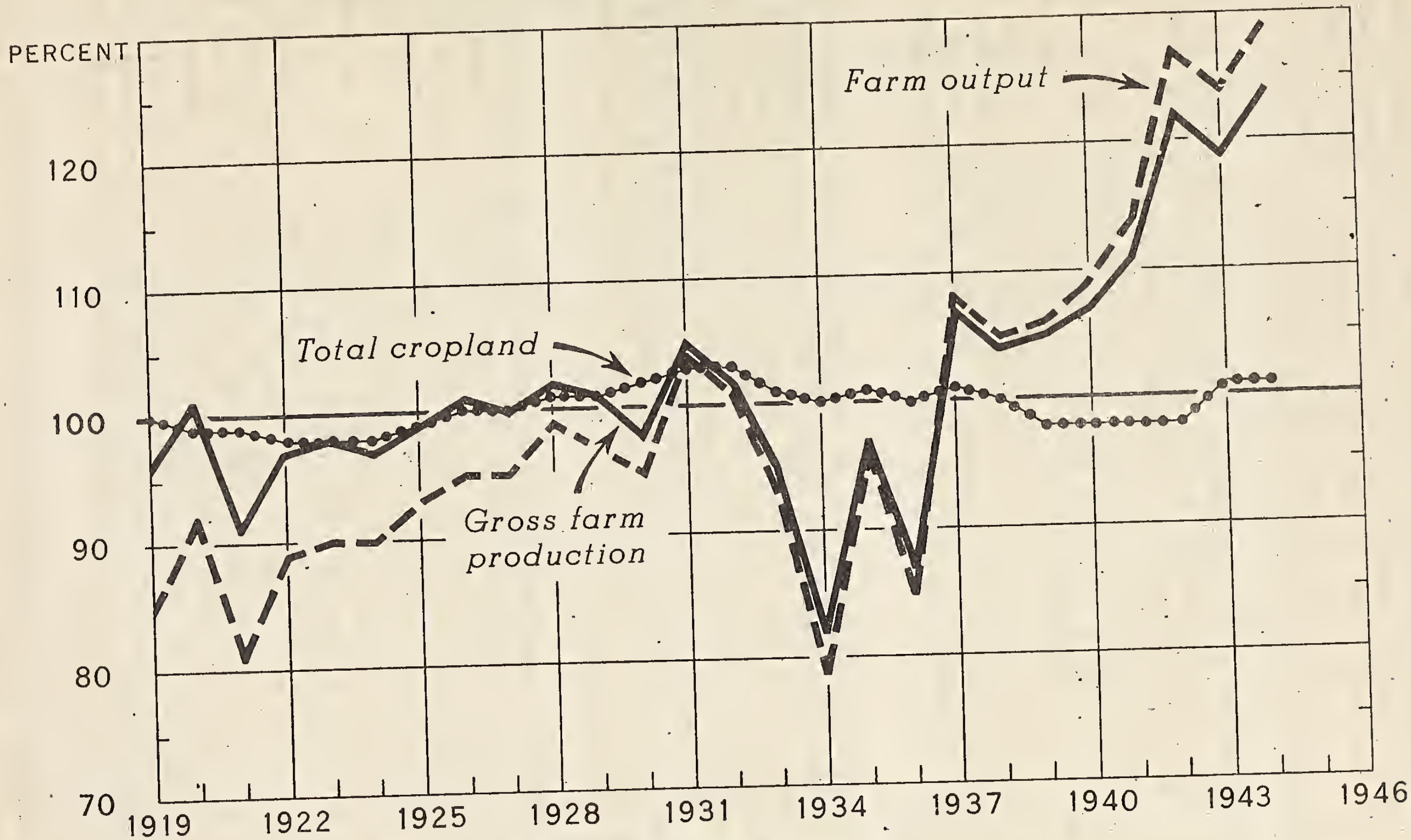
In parts of the following analysis of wartime and prewar changes in gross farm production and farm output, changes from the base period, 1935-39, to 1944 are used as measures of wartime changes, and changes from the 1919-23 average to the base period are used as measures of prewar changes. But in some instances, the use of these basing points does not provide a very good measure of wartime or prewar changes. Where droughts or other unusual production conditions have affected the basing points unduly, other years have been used for comparisons. In most of these cases the use of the years 1919 and 1939 makes possible the most accurate portrayal of wartime and prewar production changes.

WAR AND PREWAR GROSS FARM PRODUCTION AND FARM OUTPUT

By 1944 farmers had stepped up their wartime gross production to 18 percent above the production of 1939, an average of 3.6 percent a year. For the 20 years previous to 1939 the increase had been only 9 percent, or less than one-half percent annually (fig. 1). The 9-percent gross-production expansion in the two decades between the wars met the food and fiber needs and the changing demands of an increasing population. In periods of low incomes surpluses were piled up.

INDEX NUMBERS OF VOLUME OF GROSS FARM PRODUCTION AND FARM OUTPUT, AND ACREAGE OF TOTAL CROPLAND, UNITED STATES, 1919-44

(1935-39=100)



DATA FOR 1944 ARE PRELIMINARY

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Figure 1.- Gross farm production (which includes farm-produced power) did not increase rapidly until the World War II period and following the drought period 1934-36. Farm output (which excludes farm-produced power) showed a marked increase during the two decades after 1919, largely as a result of the transfer of production resources from horse and mule production and maintenance to production of other livestock and crops for sale. Total cropland acreage has changed little over the 26-year period, 1919-44, although compensating changes have occurred regionally.

Obviously farmers could have produced more in the peacetime years if the effective demand for farm products had been greater. In one sense, therefore, production became a function of national needs, as expressed in wartime by civilian, military, and lend-lease requirements, and in peacetime by market demands reflected in farm prices. There is ample evidence that if the need for food becomes great enough and the prices can be paid, farmers can increase food production substantially further, given adequate supplies of farm labor, machinery, and fertilizer.

An increase of 29 percent in gross farm production from the end of World War I to 1944 in World War II was not the result of additional cropland. During this entire period the range in cropland acreages 3/ has amounted to only 5 percent, and during the war period just closed cropland acreages have averaged a little below the long-time average (fig. 1). One of the important long-time contributing factors to the increase in farm output is the shift of at least 50,000,000 acres from the production of horse feed to the production of food and fiber for human use. Other causes, especially those that occurred during the war years, fall largely in the field of production efficiencies. These are discussed elsewhere in the report.

When farm-produced power is excluded from the measure of gross production, both long-time and wartime changes appear greater, and the long-time trend is steeper than the trend for total production. Because of this shift in the composition of gross farm production, farm output of products available for human use increased by one-fourth from 1919 to 1939 (fig. 2). As a result, the horse-and-mule production item (farm-produced power) made up only 11 percent of all gross production in 1939 compared with 22 percent of the total in 1919; by 1944 farm-produced power had dropped to 8 percent of the total.

No available measure adequately portrays the importance of the shift from the production on farms of power and other farm-production goods to the industrial production of these items. The proportion of farm-power requirements that are supplied by urban workers in the form of tractors, trucks, fuel, and oil has steadily increased since 1919, and the effect of this change on agricultural production for human use can be measured in the manner indicated herein. But it is not possible at this time to measure the change in effectiveness of workers of different sex and age on farms, as a result of the shift to mechanical power and the accompanying machines and tools. It is evident, however, that the large shift in use of farm-production resources was the most fundamental change in the farm-production situation during the 20 years preceding World War II; and it is evident that the continuation of the downward trend in farm-produced power has contributed substantially to the wartime increase in farm output available for human use.

3/ Total cropland acreage as used in this report is the sum of the estimated acreage of land, including farm gardens, orchards, and vineyards, from which one or more crops were harvested plus estimated acreages of crop failure and summer fallow.

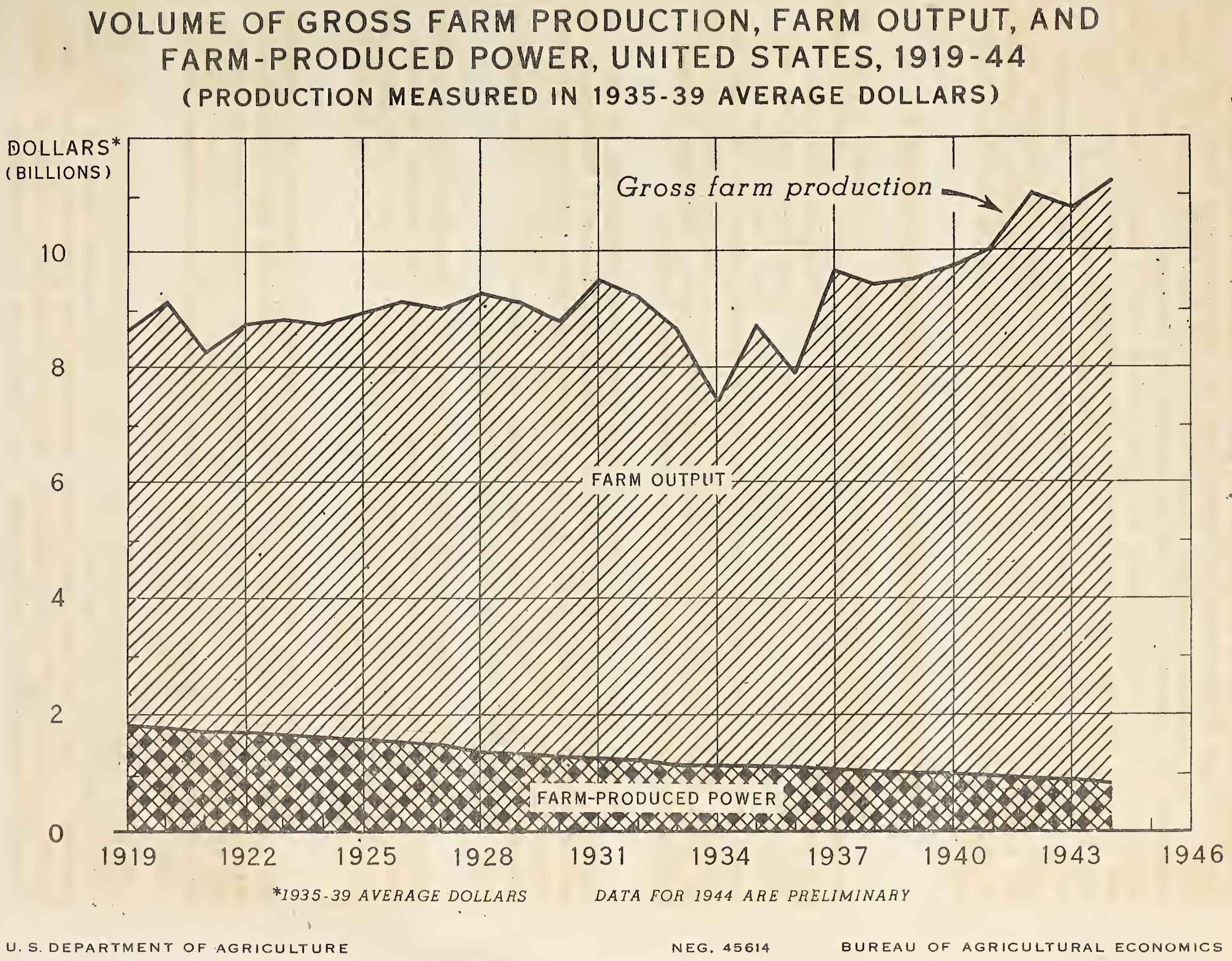

Figure 2.- Farm-produced power decreased constantly from 1919 to 1944, although by 1944 it still represented a considerable portion of gross farm production

The course of gross farm production during the first two decades following World War I was marked by several important fluctuations. Notable among these were the sharp drops in production in 1921, 1934, and 1936. The production decline from 1920 to 1921 was highlighted by sharp decreases in production of fruits, cotton and tobacco. Fruit production suffered from a heavy freeze; the boll weevil took a large toll of cotton; and tobacco acreage declined sharply when tobacco prices fell to little over half their 1919 peak. The years 1934 and 1936 witnessed the most severe droughts in the agricultural history of this Nation. Droughts in 1930, 1932, and 1933 together with the acreage adjustment programs of the AAA accounted for other dips in farm production. Throughout, fluctuations in gross farm production were accompanied by similar fluctuations in farm output.

Regional Contributions to Gross Production and Output [4]

Gross Production.- Farmers in all geographic divisions helped to increase agricultural production for the war. The greatest wartime percentage increases came in the West North Central and Mountain divisions (fig. 3). It was in these divisions and in the East North Central and Pacific divisions that large increases in feed crops and livestock, in bread grains, in soybeans, and in vegetable crops, added to the war food supply. Northeastern farmers helped to boost the upward production trend by increasing potatoes, milk, and chickens and eggs. Southern farmers helped the oil-crop situation by producing more peanuts.

Viewed from a longer-time angle, gross farm production in the Pacific division has shown an almost unbroken upward trend throughout the entire period 1919-44, while in other divisions gross production did not expand sharply until the period of World War II. Intensive lines of agricultural production were being developed more rapidly in the Pacific Coast States than in the older agricultural areas.

The South Atlantic and East South Central divisions also recorded definite increases in the years between the wars. In neither of these divisions, however, did gross production increase steadily throughout the period. No definite upward trend was in evidence in the other divisions during the prewar period.

Most divisions exhibit the major short-time fluctuations shown by the national production index. The impact of droughts and other adverse conditions, however, affected farm production to varying degrees among the divisions. The 1934 drought, for example, brought a violent drop in farm production in the West North Central division and an almost equally sharp recession in the West South Central division.

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[4] Census geographic divisions were used to present regional aspects of farm production and production per worker, primarily because most of the necessary basic data had been previously summarized by geographic divisions. Farm-employment data were available only by geographic divisions. Otherwise, different State groups might have been used to advantage.

INDEX NUMBERS OF VOLUME OF GROSS FARM PRODUCTION, BY GEOGRAPHIC DIVISIONS, 1919-44
(1935-39=100)

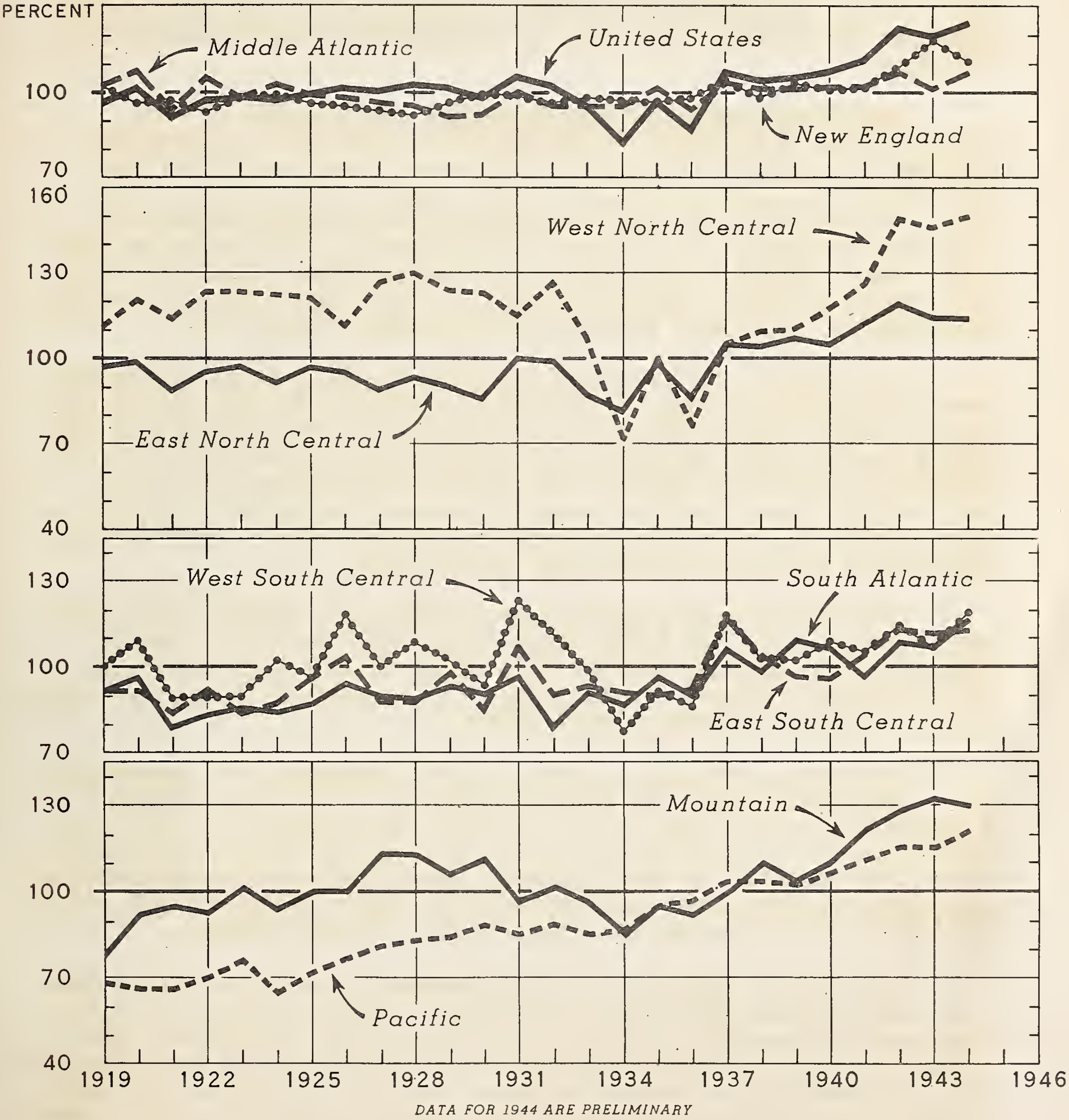

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Figure 3.- Although gross farm production fluctuated considerably in some divisions the trend was rather flat until the drought period of the middle thirties in all but the two Western divisions which had an upward trend. Sharp wartime upward trends occurred in the West North Central and Mountain divisions, particularly.

In summary, gross farm production in one or more of the 3 years 1942, 1943, and 1944 represented the highest level of the last quarter-century in the New England, East and West North Central, Mountain and Pacific divisions while as high or higher production levels had been reached once previously in the Middle Atlantic, South Atlantic, and East South Central divisions, and 7 times previously in the West South Central divisions where weather conditions make annual crop production extremely variable.

Farm Output and Farm-Produced Power.- The transfer of farm resources used in producing farm power to the production of livestock and crops for human use took place at different rates among divisions. This transfer in turn is reflected in the index of farm output. Farm output is subject to the same fluctuations, due to drought and unusual production conditions, as is gross farm production. Farm horse and mule numbers were highest in 1918, and their decrease since 1919-23 has been large enough in all geographic divisions to cause farm output to increase substantially faster than has gross farm production (table 1).

It should be noted that the exceptionally large increase from the prewar base period to 1944, in both gross production and farm output in the West North Central States, is partly caused by low production in the drought years of 1934 and 1936. If this influence on the base period is eliminated, the wartime increase in gross farm production in the West North Central States would be around 35 percent, instead of 50 percent as shown in table 1, and the increase in farm output would be about 40 percent instead of the 61 percent shown in the table.

If we had not had droughts in the 1930's, the 1935-39 base period gross production for the United States would have been 4 to 5 percent higher, and the increase from the base period to 1944 would have been about 18 percent instead of 24 percent. The increase in farm output would have been about 22 percent instead of 29.

Divisional differences in the relative importance of farm-produced power, and in its trend, are shown in table 2. In the period 1919-23, farm-produced power accounted for approximately one-fifth of gross farm production in the United States and in all divisions except the East South Central and Pacific. In the East South Central States farm-produced power represented slightly more than one-fourth of gross farm production, and in the Pacific division about 10 percent, for the period 1919-23.

The relative importance of farm-produced power as an item of gross production declined in every division from 1919-23 to 1944, as horse and mule numbers decreased. By 1944 farm-produced power represented only 8 percent of gross farm production for the United States as a whole compared with 20 percent for the period 1919-23—a decline in relative importance of considerably more than one-half. The decline in the West South Central division was about the same as the United States average, but the decrease in relative importance of farm-produced power in the East South Central division where the decline in horse and mule numbers has been relatively low was only about 40 percent. In all other geographic divisions displacement of work stock by tractors has been considerable. In the

Table 1.- Percentage change in gross farm production and in farm output, 1919-23 to 1935-39 and 1935-39 to 1944, by geographic divisions

Geographic division 1/	Change in gross farm production		Change in farm output	
	1919-23 to 1935-39	1935-39 to 1944 2/	1919-23 to 1935-39	1935-39 to 1944 2/
	Percent	Percent	Percent	Percent
New England	3	11	14	14
Middle Atlantic	- 1	7	9	10
East North Central	5	14	17	20
West North Central	-15	50	- 8	61
South Atlantic	15	17	26	20
East South Central	13	13	25	16
West South Central	5	19	16	26
Mountain	9	30	23	35
Pacific	44	21	56	23
United States	4	24	14	29

1/ Census geographic divisions. New England division includes Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut; Middle Atlantic division includes New York, New Jersey, and Pennsylvania; East North Central division includes Ohio, Indiana, Illinois, Michigan, and Wisconsin; West North Central division includes Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas; South Atlantic division includes Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida; East South Central division includes Kentucky; Tennessee, Alabama, and Mississippi; West South Central division includes Arkansas, Louisiana, Oklahoma, and Texas; Mountain division includes Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, and Nevada; Pacific division includes Washington, Oregon, and California.

2/ Preliminary.

Table 2.- Gross farm production and farm-produced power, 1/ by geographic divisions, specified periods, 1919 to 1944

(Production measured in 1935-39 average dollars)

Geographic division 2/	Gross farm production			Farm produced power			Percentage farm produced power is of gross farm production		
	Average 1919-23	Average 1935-39	1944 3/	Average 1919-23	Average 1935-39	1944 3/	Average 1919-23	Average 1935-39	1944 3/
	Million dollars	Million dollars	Million dollars	Million dollars	Million dollars	Million dollars	Percent	Percent	Percent
New England	223	230	255	40	20	16	18	9	6
Middle Atlantic	690	682	728	134	76	62	19	11	9
East North Central	1,679	1,773	2,029	319	190	129	19	11	6
West North Central	2,329	1,976	2,965	472	261	197	20	13	7
South Atlantic	974	1,118	1,304	208	151	146	21	14	11
East South Central	729	819	925	194	147	148	27	18	16
West South Central	1,075	1,125	1,343	235	150	118	22	13	9
Mountain	478	522	678	100	55	47	21	11	7
Pacific	564	815	987	63	33	24	11	4	2
United States	8,741	9,060	11,214	1,765	1,083	887	20	12	8

1/ Farm-produced power is the cost in 1935-39 average dollars of keeping work stock and raising colts plus any increase in value above costs of colts up to 2 years of age. Net depreciation of work animals over 2 years old is included in computing costs of keeping work animals. The basic assumption for this computation is that the volume of farm-produced power is equal to the value in 1935-39 average dollars of the feed, labor, net depreciation, and other cost items devoted to the horse and mule enterprise.

2/ See footnote 1, table 1.

3/ Preliminary.

Pacific Coast States the decline in the relative importance of farm-produced power amounted to 82 percent while in the South Atlantic States the drop was only 48 percent.

Thus, by 1944 farm-produced power had decreased in importance everywhere but was still an important item of production in the three Southern divisions where it represented on the average from 9 to 16 percent of gross farm production. These regional decreases are closely associated with increases in farm output for human use.

Crops' Contribution to Gross Production

The general trend in crop and pasture production in the United States follows closely the trend of total gross farm production. Annually, there is considerable more fluctuation in the crop index than there is in the total gross production index, because of the unstabilizing effect of weather on crop and pasture production (fig. 4). National crop and pasture production was only about 10 percent larger in 1939 than it was 20 years earlier, but in the fifth year of the war, 1944, it was 17 percent greater than in prewar 1939.

Increases in crop production per acre of cropland with practically no change in the cropland base, particularly since the drought and acreage adjustment period 1933-36, has been the dominant factor in the crop production picture in the United States. Total cropland acreage in the United States has remained virtually unchanged since 1919. The flat trend in national cropland acreage resulted from compensating changes in the cropland base in the various geographic divisions (fig. 5).

During the 1920's the trend in total cropland acreage was downward in the New England, Middle Atlantic, East North Central, South Atlantic, and East South Central divisions. But the total increase in the cropland base in the West North Central, West South Central, and Mountain divisions matched the total decrease in the former divisions. Cropland acreage in the Pacific division had a relatively flat trend during the period. Thus the 1920's following World War I witnessed a decline in cropland acreage in the East and an increase in the West, with the national total remaining practically constant. During World War II considerable increases in cropland acreages have occurred only in the Mountain and Pacific Coast groups of States, but these were largely offset by decreases in the South.

Production Per Acre of Cropland [5].- The trend in crop production per acre of cropland in the United States was flat from 1919 to the drought period of the middle thirties; since then the trend has been sharply upward (fig. 6). Favorable weather and wartime incentives for production increases brought a decrease in the acreage of crop-failure and summer-fallow land and a corresponding increase in acreage of cropland harvested.

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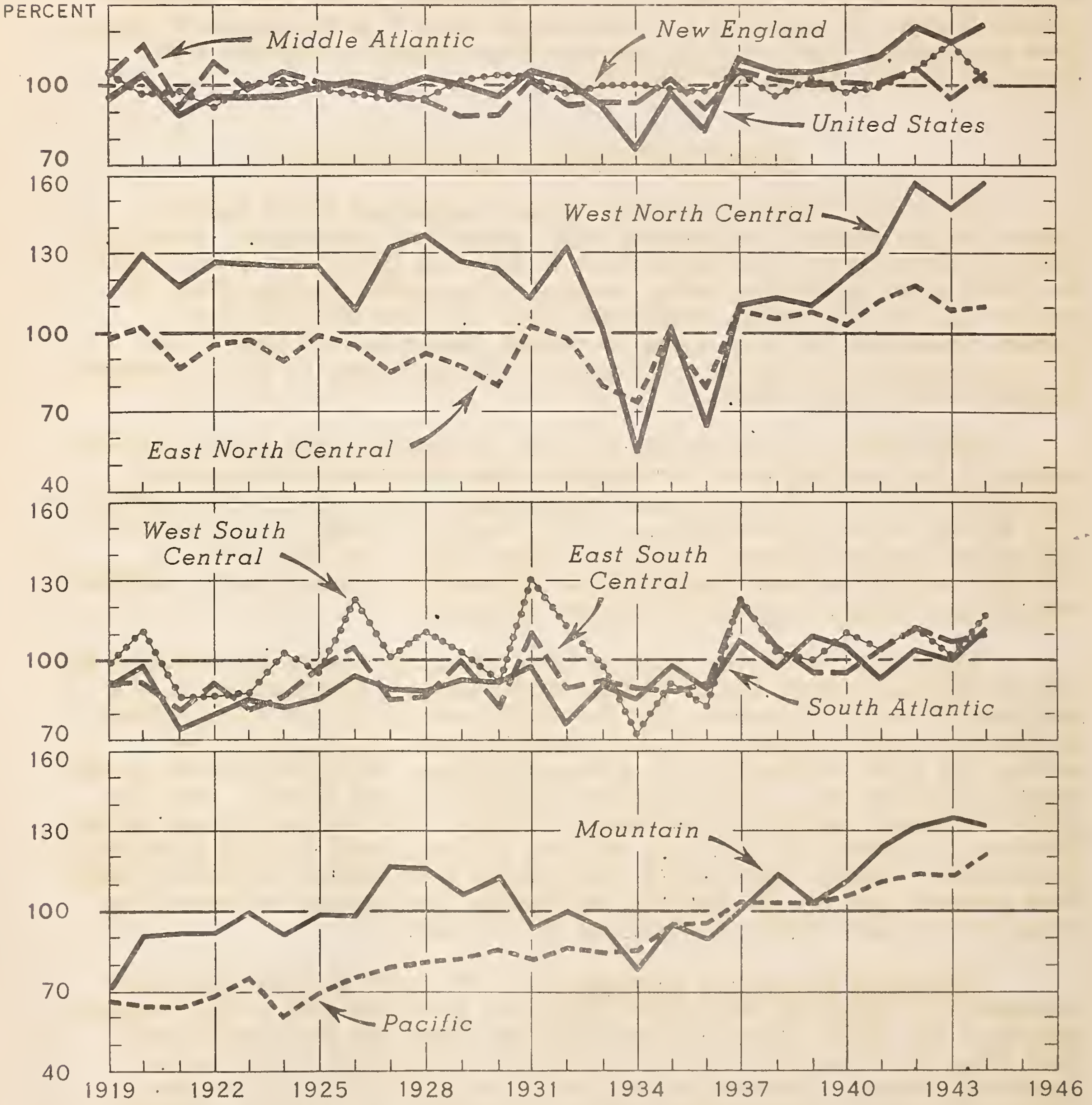
[5] The index of crop production per acre was calculated by dividing the index of total crop production (excluding pasture) by the index of total cropland acreage. For a comparison of this index with the B.A.E. crop yield index of 28 crops, see page 72.

INDEX NUMBERS OF VOLUME OF CROP AND PASTURE PRODUCTION, BY GEOGRAPHIC DIVISIONS, 1919-44 *
(1935-39 = 100)



DATA FOR 1944 ARE PRELIMINARY
* CROP PRODUCTION DURING THE YEAR PLUS PASTURE USED BY LIVESTOCK DURING THE YEAR

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Figure 4.- Trends in crop and pasture production follow closely those of total gross farm production shown in figure 3, but show greater year-to-year fluctuations.

INDEX NUMBERS OF TOTAL CROPLAND ACREAGE, BY GEOGRAPHIC DIVISIONS, 1919-44

(1935-39=100)

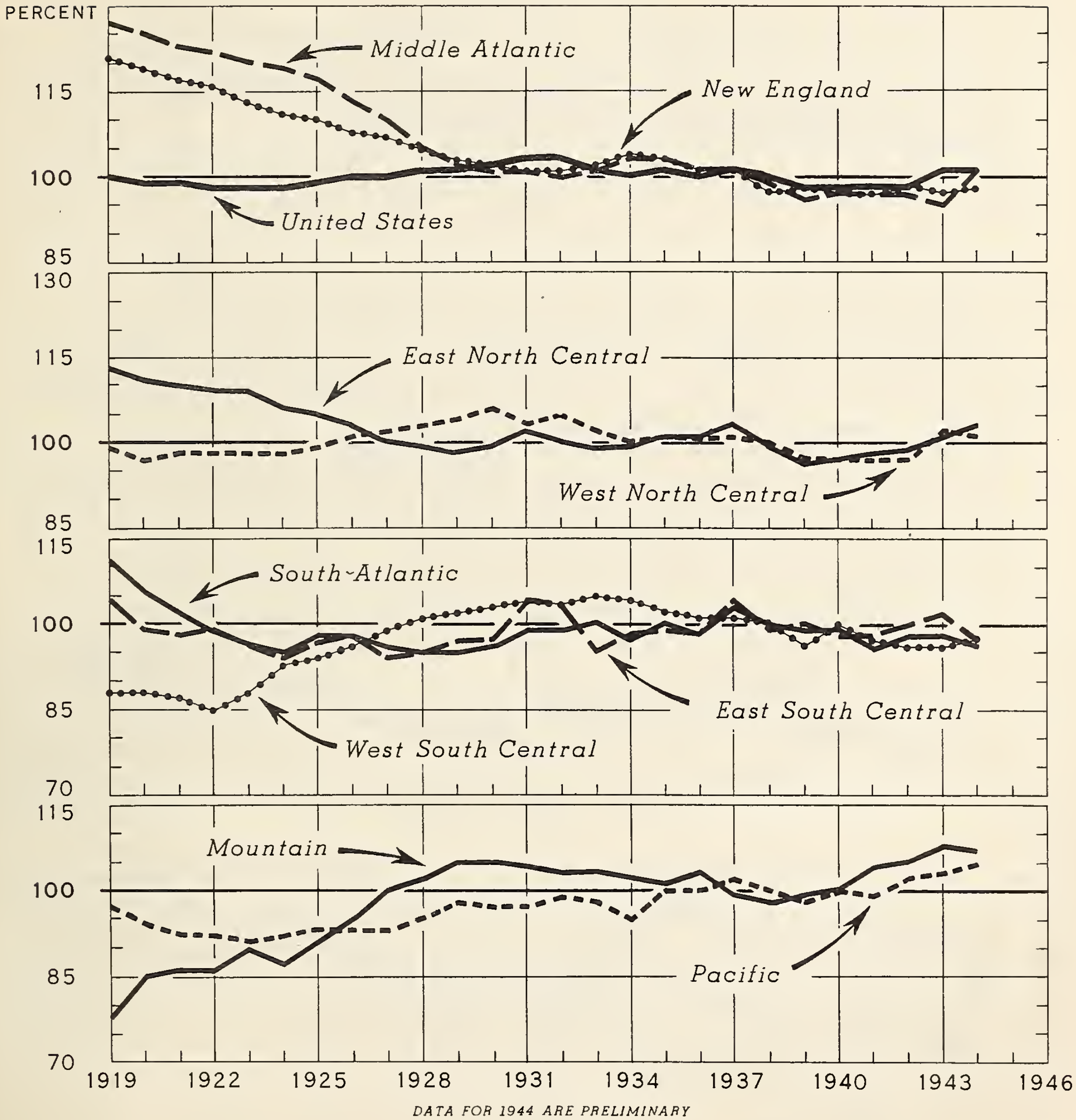

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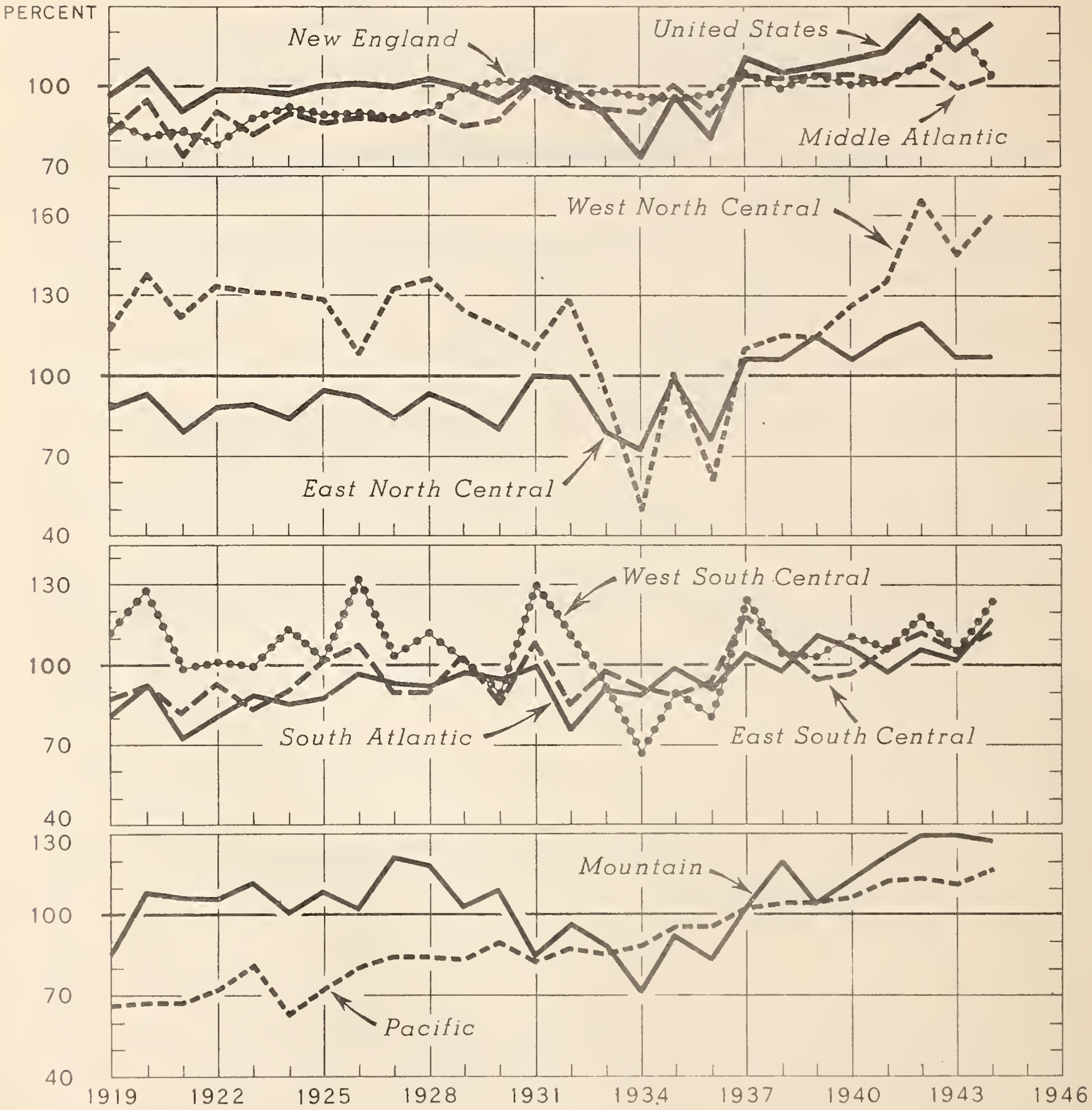
Figure 5.- Total cropland, which includes acreages from which one or more crops were harvested plus acreages of crop failure and summer fallow, remained practically unchanged from 1919 to 1944. During the first half of the period the flat national trend resulted from decreases in cropland acreage in eastern United States and increases in the western parts of the country. Total cropland trends have been relatively flat in all geographic divisions during the latter part of the period, with only the two Western divisions exhibiting significant wartime increases in cropland acreage.



INDEX NUMBERS OF VOLUME OF TOTAL CROP PRODUCTION PER ACRE OF CROPLAND, BY GEOGRAPHIC DIVISIONS, 1919-44
(1935-39=100)

DATA FOR 1944 ARE PRELIMINARY

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Figure 6.- Drastic reductions in the drought years, 1934 and 1936, and marked wartime increases are the big stories of national crop-production per acre. The relatively steady upward trend in crop production per acre in the Pacific division reflects in part the increasing emphasis given to production of fruits and truck crops.

Although the harvested cropland base increased only moderately, favorable growing conditions and other factors contributing to increased yields were so pronounced that crop production per acre during World War II increased substantially.

Increases in crop production per acre from the drought period of the middle thirties to the World War II period took place in every geographic division. For the entire period since 1919, the Pacific division has shown the most consistent upward trend in gross crop production per acre. This upward trend reflects in large part the increasing proportion of the cropland base that has been devoted to fruit, truck crop, and cotton production in the Pacific division and thus results from a more intensive use of cropland as well as from increases in yields of specific crops.

Crop production per acre in the Mountain division had a relatively flat trend from 1919 to 1930, dropped sharply during the drought period of the middle thirties, and recorded a sharp upward trend from the drought period through the World War II period.

The New England and Middle Atlantic divisions have recorded long-time upward trends in crop production per acre, although the trends have not been so consistent or so sharply upward as the trend in the Pacific division.

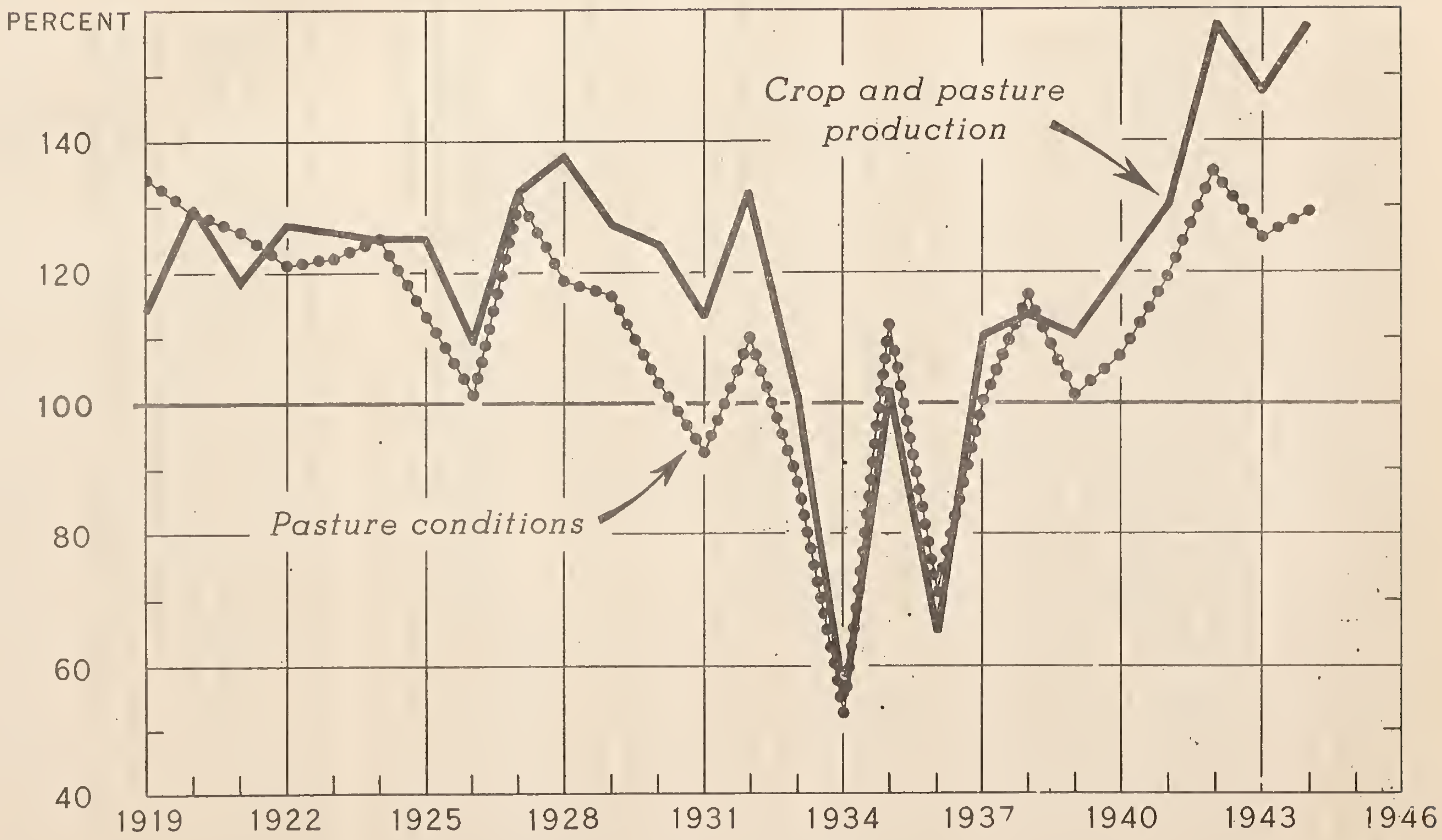
Crop production per acre in the two North Central divisions showed a flat trend from 1919 to the middle thirties, but increased sharply through the World War II period from the low point reached during the droughts.

The trend in crop production per acre in the West South Central States has been relatively flat for the entire period, 1919-44, while the trend in the South Atlantic and East South Central divisions has been moderately upward for the 26-year period.

The West North Central division suffered the greatest decline in production in the early thirties. This was caused mainly by unfavorable weather conditions (fig. 7). The index of dairy-pasture conditions as reported by crop correspondents in that division reflects major changes in weather conditions from year to year, and the correlation of weather conditions with crop and pasture production in the division is rather high. Variations in weather conditions are responsible for many of the fluctuations in crop and pasture production in the other regions, as well.

INDEX NUMBERS OF VOLUME OF CROP AND PASTURE PRODUCTION AND DAIRY PASTURE CONDITIONS, WEST NORTH CENTRAL DIVISION, 1919-44

(1935-39=100)



DATA FOR 1944 ARE PRELIMINARY

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Figure 7.- Year-to-year fluctuations in the volume of crop and pasture production are closely associated with changes in weather as reflected by dairy pasture conditions. Good weather makes good pasture and good crops.

Livestocks' Contribution to Gross Production 6/

Total livestock production in the United States, including product-added by horses and mules, was only 8 percent greater in 1939 than in 1919; in the war year 1943, and again in 1944, livestock production was stepped up about 22 percent above that of 1939 (fig. 8). Because of substantial feed inventories livestock production showed less year-to-year fluctuation in all divisions than was true of crop and pasture production. Changes in the level of livestock production, however, were closely associated with changes in crop and pasture production in some divisions, particularly the West North Central, West South Central, and Mountain divisions where livestock production fell sharply during the drought and the years of the acreage-adjustment program of the thirties.

Although production of all livestock on United States farms increased by only 8 percent from 1919 to 1939, production of livestock and livestock products for human use increased by 30 percent in the same period; and in 1944 had increased to 63 percent above the production in 1919. Thus, over half of the 25-year increase in livestock production for human use came in the war period, 1939-44 (fig. 9). These data further emphasize the importance of the fundamental shift of farm-production resources from farm-produced power to livestock for food that has occurred during the last quarter century. Differences among geographic divisions in the extent of this shift of production resources can be seen by comparing figures 8 and 9. No distinct upward trend in livestock production, including horses and mules, was in evidence in most of the divisions until World War II, although rather steady increases in production of livestock and livestock products for food took place from 1919 to 1944 in nearly all divisions. Exceptions for the West North Central, Mountain, and West South Central divisions during the thirties were previously noted.

CHANGES IN COMPOSITION OF GROSS FARM PRODUCTION

Long-time and wartime changes in all of the various items that make up total gross farm production have not been in the same direction or at the same general rate of increase or decrease. The important downward trend in farm-produced power that resulted in more production of livestock and livestock products for food is shown in the bottom two graphs in the first column of figure 10. Pasture used by livestock and production of feed grains and hay—the "feed base" of farms in the United States—remained relatively constant during the 20 years preceding World War II as did

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6/ Livestock production, or "product added" by livestock, is that part of total farm production resulting from conversion of feed and pasture into milk, meat, farm-produced power, etc. In terms of 1935-39 average dollars, it is the production added to feed and pasture consumed by livestock, and represents the contribution of labor and capital used in feeding and caring for livestock. Farm produced feeds and pasture consumed by livestock are included in crop production in constructing the index of volume of gross farm production. Farm output excludes the volume of feed and pasture consumed by horses and mules and also excludes the "product added" by horses and mules.

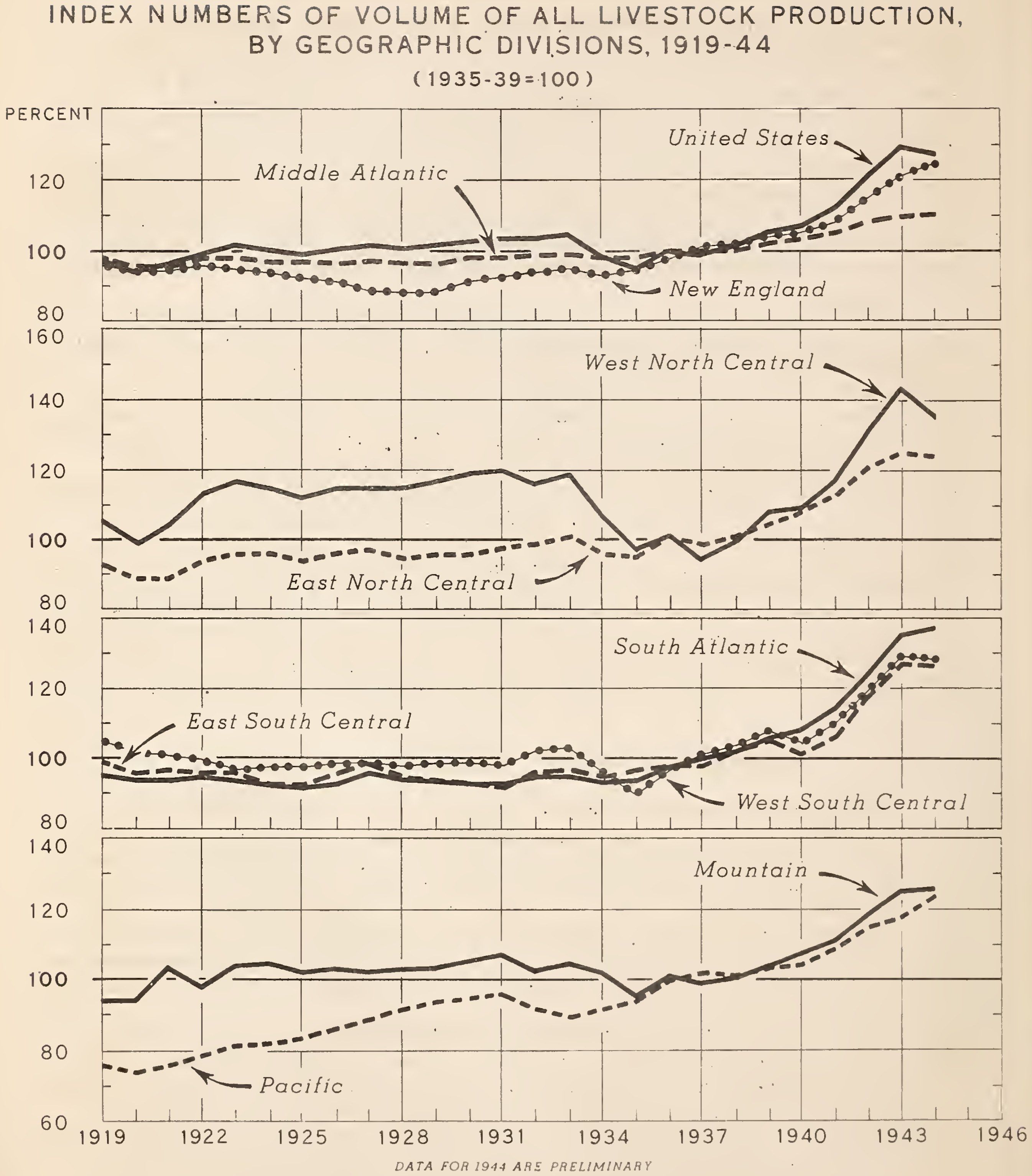

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Figure 8.- Volume of all livestock production (including product added by horses and mules) had a relatively flat trend in most divisions until the World War II period during which the trend was sharply upward.

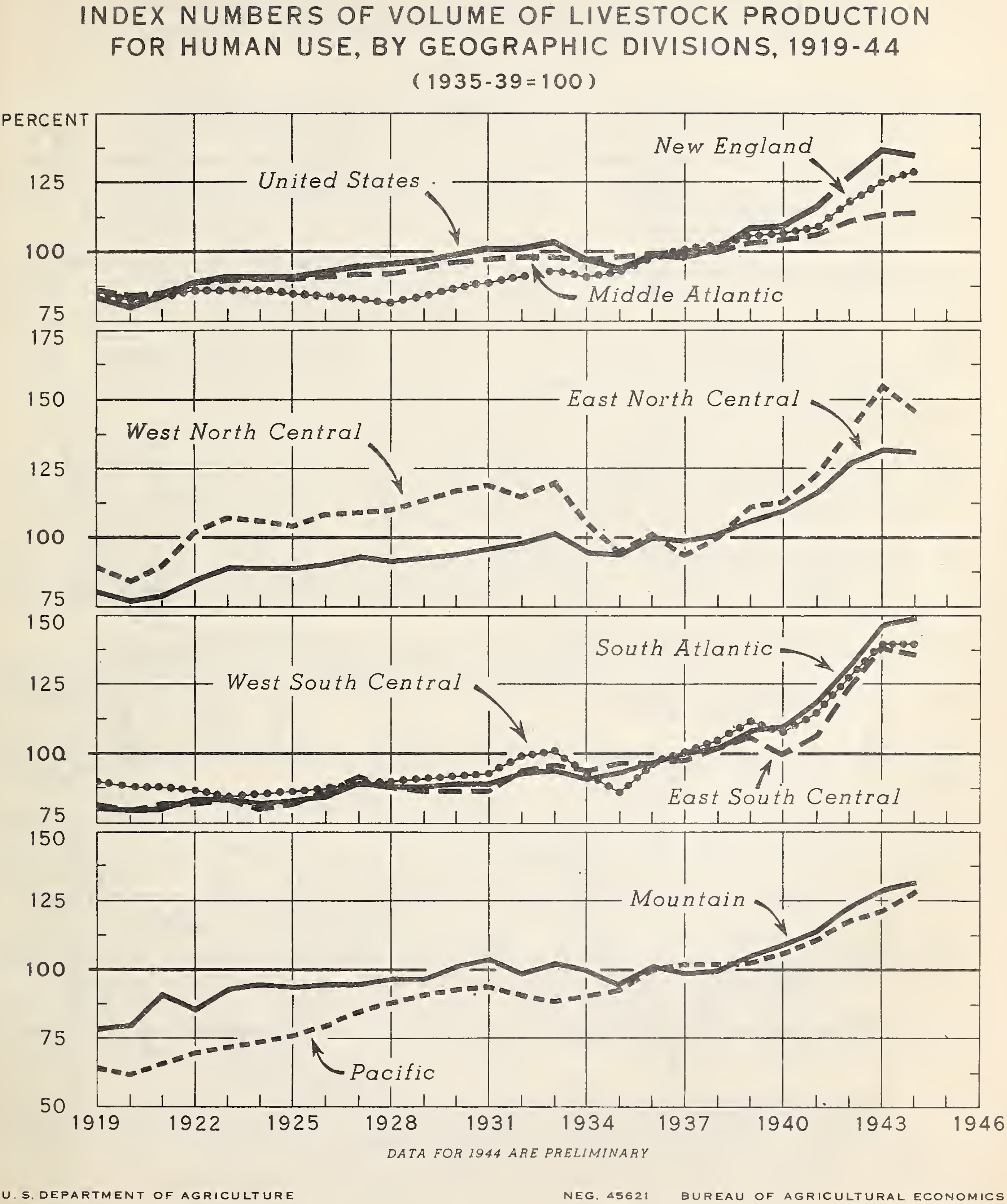
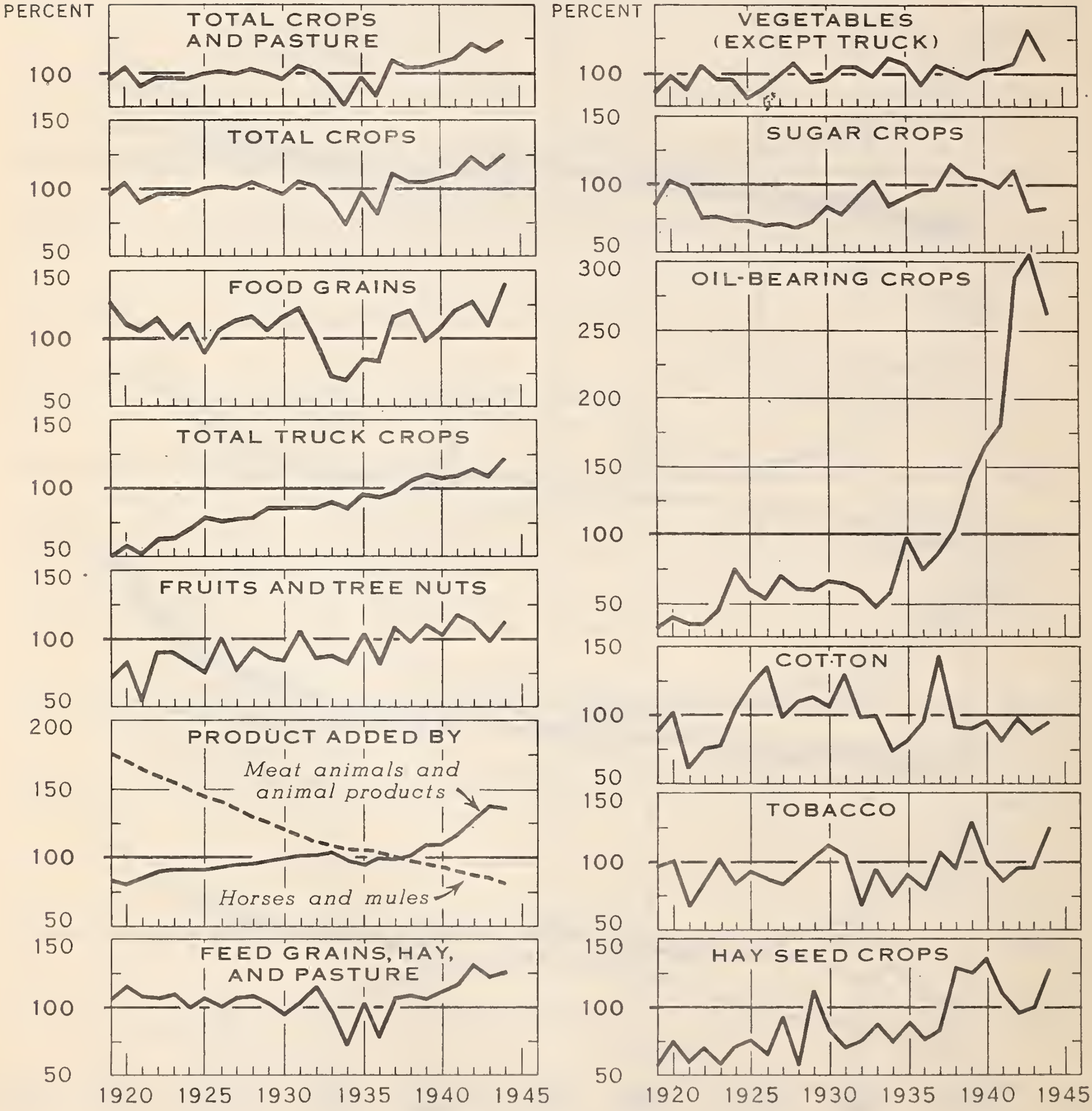


Figure 9.- The upward trend in the production of meat animals and animal products was common to all divisions. Before the World War II period, this upward trend reflected largely the release of horse and mule feed for production of livestock and livestock products for human consumption.



INDEX NUMBERS OF VOLUME OF FARM PRODUCTION, BY SELECTED PRODUCTS, UNITED STATES, 1919-44
(1935-39=100)

DATA FOR 1944 ARE PRELIMINARY

U. S. DEPARTMENT OF AGRICULTURE NEG. 45622 BUREAU OF AGRICULTURAL ECONOMICS

Figure 10.- Long-time upward trends have occurred in the production of truck crops, fruits and tree nuts, meat animals and animal products, oil crops and hay seed crops. Production of several other crop groups expanded during World War II. Oil-crops production increased most rapidly in wartime. The trend in farm-produced power was continuously downward from 1919 to 1944.

production of all livestock. But the steady decline in farm-produced power made possible the use of more of the feed base and more labor for an almost continuous increase in production of meat, milk, and eggs for human consumption.

Important changes in the composition of crop production for direct consumption have taken place in the last quarter-century. Sharp long-time upward trends are underway in production of truck crops, and fruits and nuts. The prewar upward trend in production of peanuts, soybeans, and flaxseed was accelerated phenomenally in response to wartime demands. Combined production of potatoes, sweetpotatoes, dry beans and dry peas has shown an upward trend over the entire period, although the rate of increase has not been nearly so great as that of truck crops. A long-time upward trend in production of hay seed crops is also in evidence.

Food grains, sugar crops, cotton, and tobacco, showed considerable fluctuation in volume of production, but showed no distinct upward trend.

Considerable year-to-year fluctuations in production of nearly all the groups of crops have occurred. Droughts, acreage-adjustment programs, and other conditions have affected production of most of the crop groups. Year-to-year fluctuations have characterized fruit and nut production more than any other crop group. The "saw-tooth" effect in the index of fruit and nut production is due in part to the tendency toward alternate light and heavy bearing, particularly of apples which heavily weight the fruit and nut index.

Variation in weather conditions, acreage changes in response to price conditions, etc., result in year-to-year production fluctuations of other crop groups.

Influence of Major Livestock and Crop Groups on Gross Production

During Base Period.- The various groups of farm products contribute in different proportions to gross farm production, and assume varying degrees of relative importance in the different geographic divisions (table 3). Product added by all livestock accounted for slightly more than one-fourth of total gross farm production during the 5-year base period, 1935-39 while crop and pasture production made up almost three-fourths. Feed grains, and hay and pasture--the livestock feed base--amounted to more than one-third of total gross production. Food grains, cotton, and truck crops were the only other groups comprising more than 5 percent each of total gross production. Fruit and nut production accounted for about 5 percent of the total.

More than 40 percent of national gross farm production in 1935-39 came from the two North Central divisions. The three Southern divisions accounted for a third of the total and the two Western and two Northeastern divisions accounted for 15 percent and 10 percent, respectively.

Table 3.- Gross farm production by geographic divisions, average 1935-39 1/
(Production measured in 1935-39 average dollars)

Item 2/	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	United States
					Million dollars					
Gross farm production	229.6	682.4	1,773.3	1,975.6	1,118.0	819.2	1,124.8	521.9	814.7	9,059.5
Product added by all livestock	91.5	269.9	578.3	631.4	211.1	167.3	234.6	137.5	171.7	2,493.3
Product added by meat animals and animal products	83.4	239.2	509.6	537.3	161.1	118.3	188.7	120.4	158.0	2,116.0
Product added by horses and mules	8.1	30.7	68.7	94.1	50.0	49.0	45.9	17.1	13.7	377.3
Crop and pasture production	138.1	412.5	1,195.0	1,344.2	906.9	651.9	890.2	384.4	643.0	6,566.2
Food grains	---	29.3	115.6	263.3	29.3	10.7	92.3	60.5	66.5	667.5
Feed grains and hay	47.5	176.8	737.4	805.2	213.4	217.2	219.7	110.8	109.2	2,637.2
Cotton (lint and seed)	---	---	---	18.8	155.0	207.9	349.3	19.1	28.0	778.1
Oil bearing crops	---	.2	35.2	21.1	29.1	7.4	5.4	.4	1.6	100.4
Tobacco	8.9	4.7	7.2	1.0	187.6	70.1	---	---	---	279.5
Truck crops	23.3	74.5	78.6	34.8	110.8	47.4	56.3	28.4	105.6	559.7
Fruits and tree nuts	12.6	37.8	36.0	7.8	77.9	13.9	21.2	10.4	214.6	432.2
Vegetables (except truck)	34.7	51.2	55.7	33.3	46.4	23.7	21.0	41.6	42.0	349.6
Sugar crops	2.0	1.5	8.1	7.7	7.2	6.6	21.0	23.6	11.9	89.6
Seed crops	---	.4	11.2	12.2	2.1	2.6	1.2	6.8	2.3	38.8
Miscellaneous crops	---	---	---	---	4.0	2.7	2.9	---	7.4	17.0
Pasture used by livestock	9.1	36.1	110.0	139.0	44.1	41.7	99.9	82.8	53.9	616.6
					Percent of United States total					
Gross farm production	2	8	20	22	12	9	12	6	9	100
Product added by all livestock	4	11	23	25	8	7	9	6	7	100
Crop and pasture production	2	6	18	20	14	10	14	6	10	100

1/ See footnote 1, table 1.

2/ Because of their little importance some commodities were omitted in some divisions.

The distribution of livestock production among the divisions differs from that of crop production. Nearly one-half of United States livestock production in 1935-39 was in the two North Central divisions where feed grains and meat and dairy animals are important. The three Southern divisions contributed one-fourth, the two Northeastern divisions 15 percent, and the two Western divisions 13 percent of total livestock production. Cotton and tobacco production in the South enabled the three Southern divisions to match the two North Central feed and bread grain divisions in crop and pasture production, each broad area accounting for almost 40 percent of United States total gross crop production. About one-sixth of the total gross crop production came from the two Western divisions and less than 10 percent from the two Northeastern divisions. The relatively high livestock production compared with crop production in the Northeastern States is made possible by the bringing in of large quantities of feed from the Central States for poultry and dairy production.

Feed crops, including grains, hay and pasture were the most important crop group in every division except the West South Central States where cotton was most important, and the Pacific Coast States where fruits and nuts ranked first (table 4). In both the East North Central and West North Central divisions the feed crop item made up more than 70 percent of total crop and pasture production.

Differences in the importance of production from the various crop groups, as classified in tables 3 and 4, follow closely major type-of-farming differences. The major crop contributions in addition to feed grains, hay, and pasture are as follows: Vegetable crops and fruits in the New England and Middle Atlantic States; food grains, vegetable crops, and oil crops (flax and soybeans), in the North Central divisions; cotton, tobacco, vegetable crops, fruits and nuts, and oil crops (peanuts) in the South Atlantic and East South Central divisions; cotton, food grains, vegetable crops, and sugar crops in the West South Central States; vegetable crops, food grains, cotton, and sugar beets in the Mountain States; fruits and nuts, vegetable crops, food grains, cotton and sugar beets in the Pacific division.

During 26-year Period.- Figures 11 to 15 make possible examination of changes in relative importance of the various groups of crops and livestock in United States gross production during the peace and war periods of the last 26 years. In figure 11, United States gross production has been divided into four broad groups, and product added by the horse-and-mule enterprise set off from product added by livestock production for human consumption. Marked wartime increases in production, particularly in livestock and its feed base, and the long-time shift from farm-produced power to production of livestock for food are the two big changes that have taken place.

Changes in composition of United States livestock production are shown in figure 12. The decline in use of feed for horses and mules was accompanied by some increase in production and use of feed by each broad class of other livestock. Dairy products increased steadily over the entire period, 1919-44, at an average rate of 2.3 percent per year. During the last 5 years of the 26-year period, 1940-44, production of dairy products amounted to 26.4 percent of total livestock production, compared with

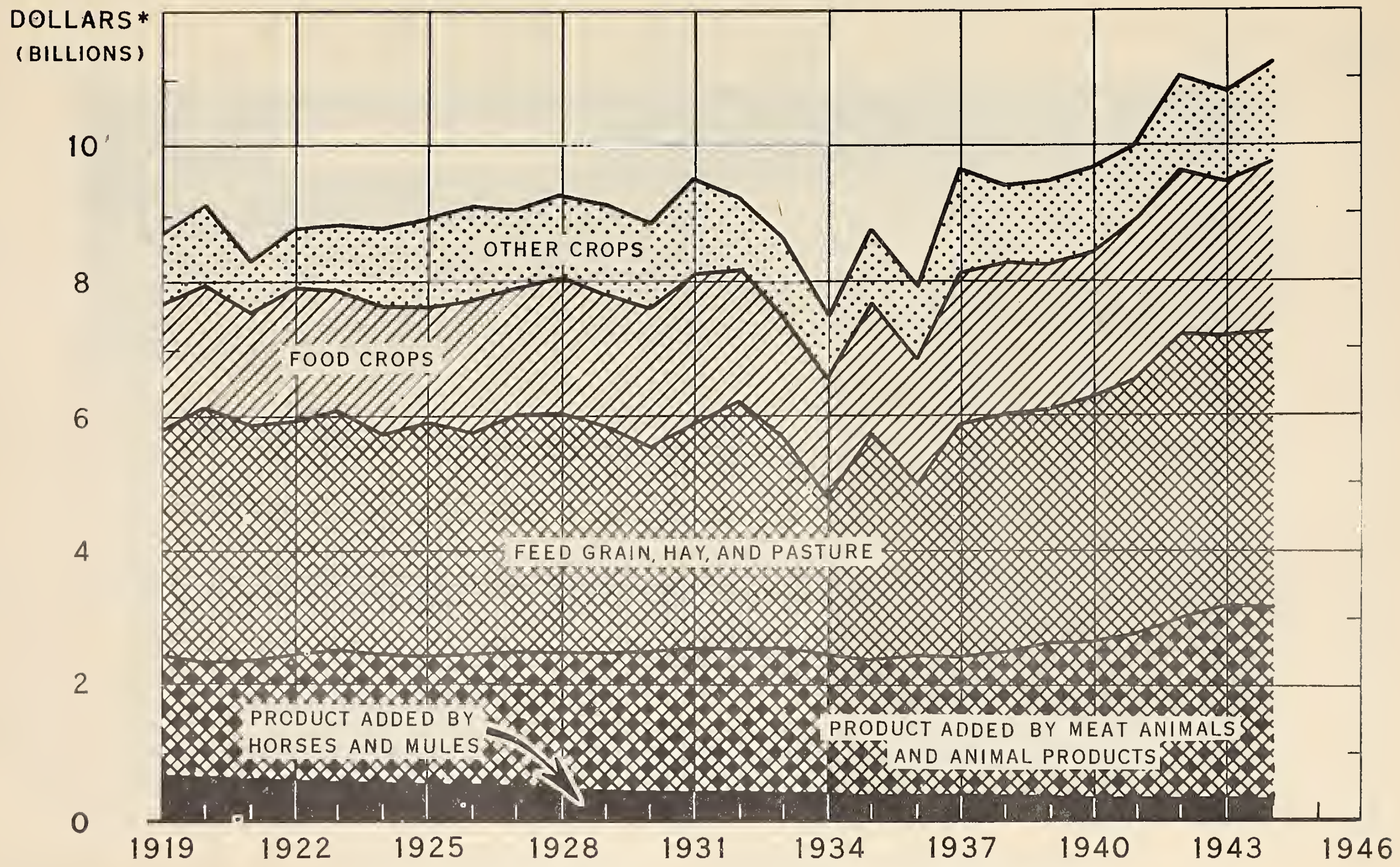
Table 4.- Total average crop and pasture production during 1935-39, and percentage of total represented by various crop groups, by geographic divisions 1/
(Production measured in 1935-39 average dollars)

Geographic division 2/	Total crop and pasture production	Percentage of total crop and pasture production								
		Feed grains hay and pasture	Food grains	Vegetables, including truck crops	Fruits and nuts	Cotton	Tobacco	Oil crops	Sugar crops	All other crops
	Mil. dol.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
New England	138.1	41.0		42.0	9.1	---	6.4		1.5	---
Middle Atlantic	412.5	51.6	7.1	30.5	9.2	---	1.1		0.4	0.1
East North Central	1,195.0	70.9	9.7	11.2	3.0	---	0.6	3.0	0.7	0.9
West North Central	1,344.2	70.2	19.6	5.1	0.6	1.4		1.6	0.6	0.9
South Atlantic	906.9	28.4	3.2	17.3	8.6	17.1	20.7	3.2	0.8	0.7
East South Central	651.9	39.7	1.7	10.8	2.1	31.9	10.9	1.1	1.0	0.8
West South Central	890.2	35.9	10.4	8.7	2.4	39.2	---	0.6	2.3	0.5
Mountain	384.4	50.4	15.7	18.2	2.7	5.0	---	0.1	6.1	1.8
Pacific	643.0	25.4	10.2	23.0	33.4	4.4	---	0.2	1.9	1.5
United States	6,566.2	49.6	10.2	13.8	6.6	11.8	4.3	1.5	1.4	0.8

1/ See footnote 1, table 1.
2/ Because of their little importance some commodities were omitted in some divisions.

VOLUME OF GROSS FARM PRODUCTION, BY GROUPS OF PRODUCTS, UNITED STATES, 1919-44

(PRODUCTION MEASURED IN 1935-39 AVERAGE DOLLARS)



*1935-39 AVERAGE DOLLARS   DATA FOR 1944 ARE PRELIMINARY

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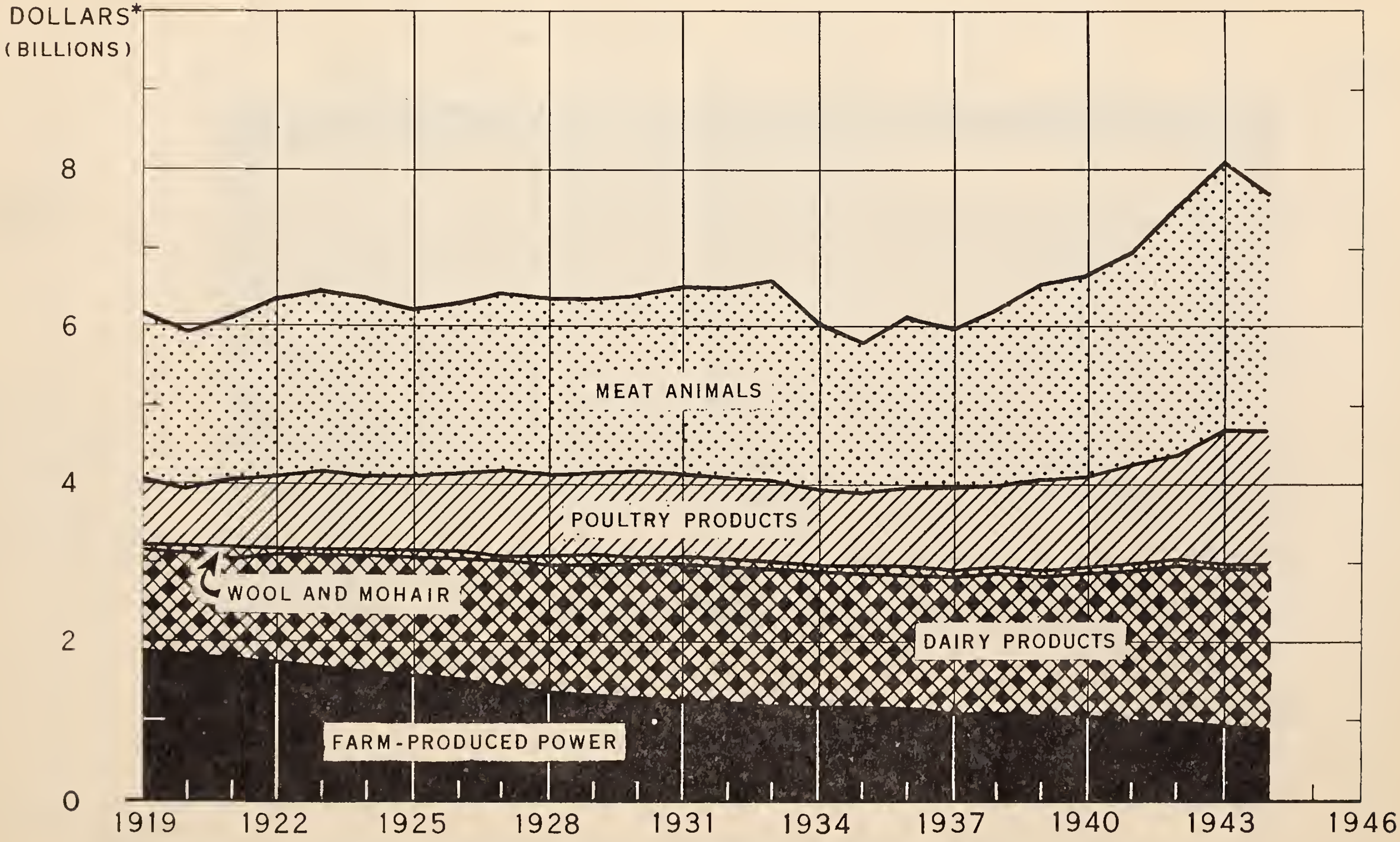
Figure 11.- The most fundamental change in the farm production picture during the 20 years after World War I was the shift from farm-produced power of horses and mules to production of other livestock. This shift continued through World War II when production of feed crops and many other crops greatly expanded.

COMBINED VOLUME OF LIVESTOCK PRODUCTION AND FEED CONSUMPTION, BY CLASSES OF LIVESTOCK, UNITED STATES, 1919-44

(VOLUME MEASURED IN 1935-39 AVERAGE DOLLARS)



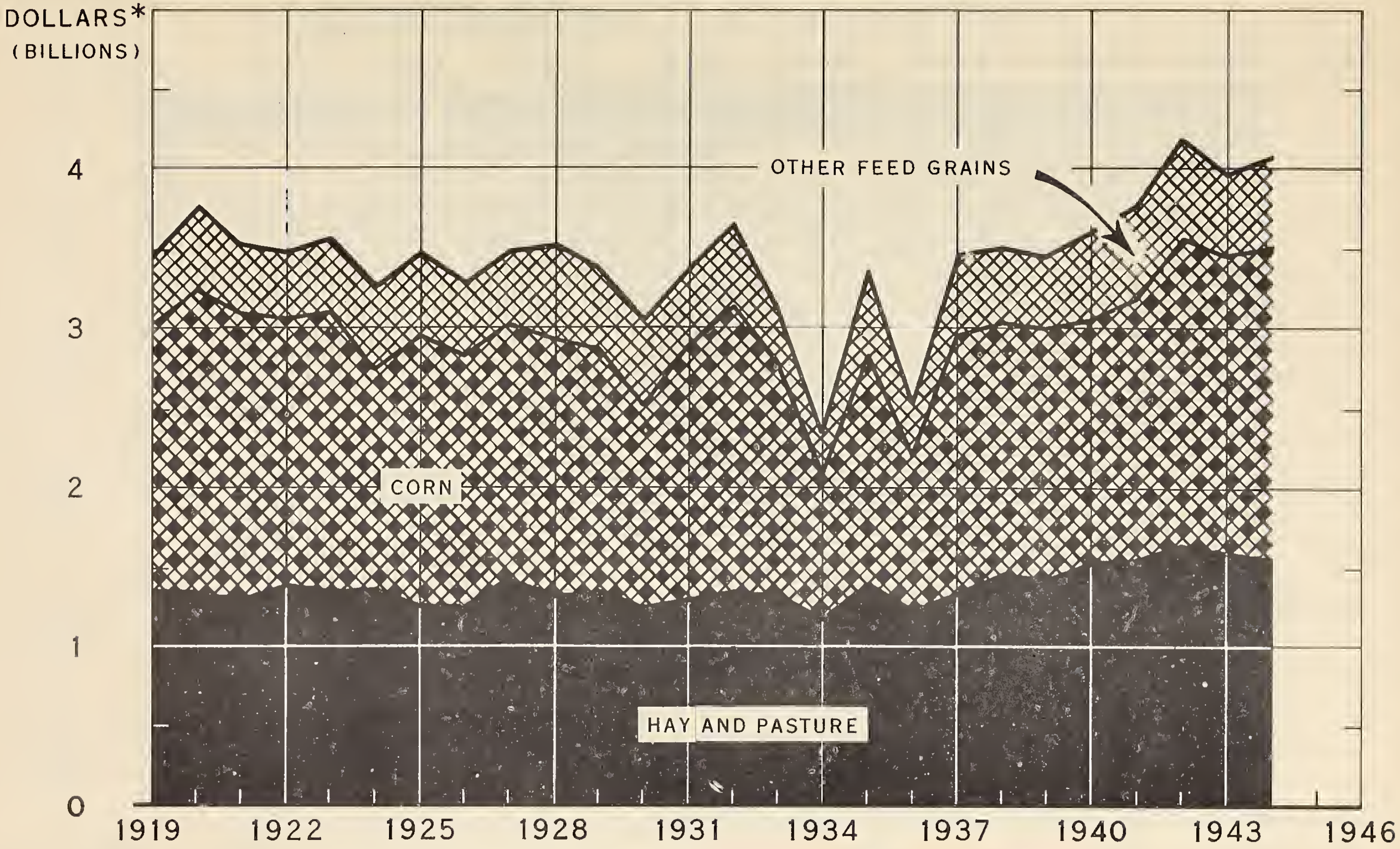
*1935-39 AVERAGE DOLLARS   DATA FOR 1944 ARE PRELIMINARY

U. S. DEPARTMENT OF AGRICULTURE   NEG. 45624   BUREAU OF AGRICULTURAL ECONOMICS

Figure 12.- The combined production of meat animals and animal products and feed and pasture consumed by them was increasing while farm-produced power of horses and mules was declining. The greatest rate of increase in production of meat animals and their feed consumption occurred during World War II.

VOLUME OF FEED GRAIN, AND HAY AND PASTURE PRODUCTION, UNITED STATES, 1919-44

(PRODUCTION MEASURED IN 1935-39 AVERAGE DOLLARS)



* 1935-39 AVERAGE DOLLARS DATA FOR 1944 ARE PRELIMINARY

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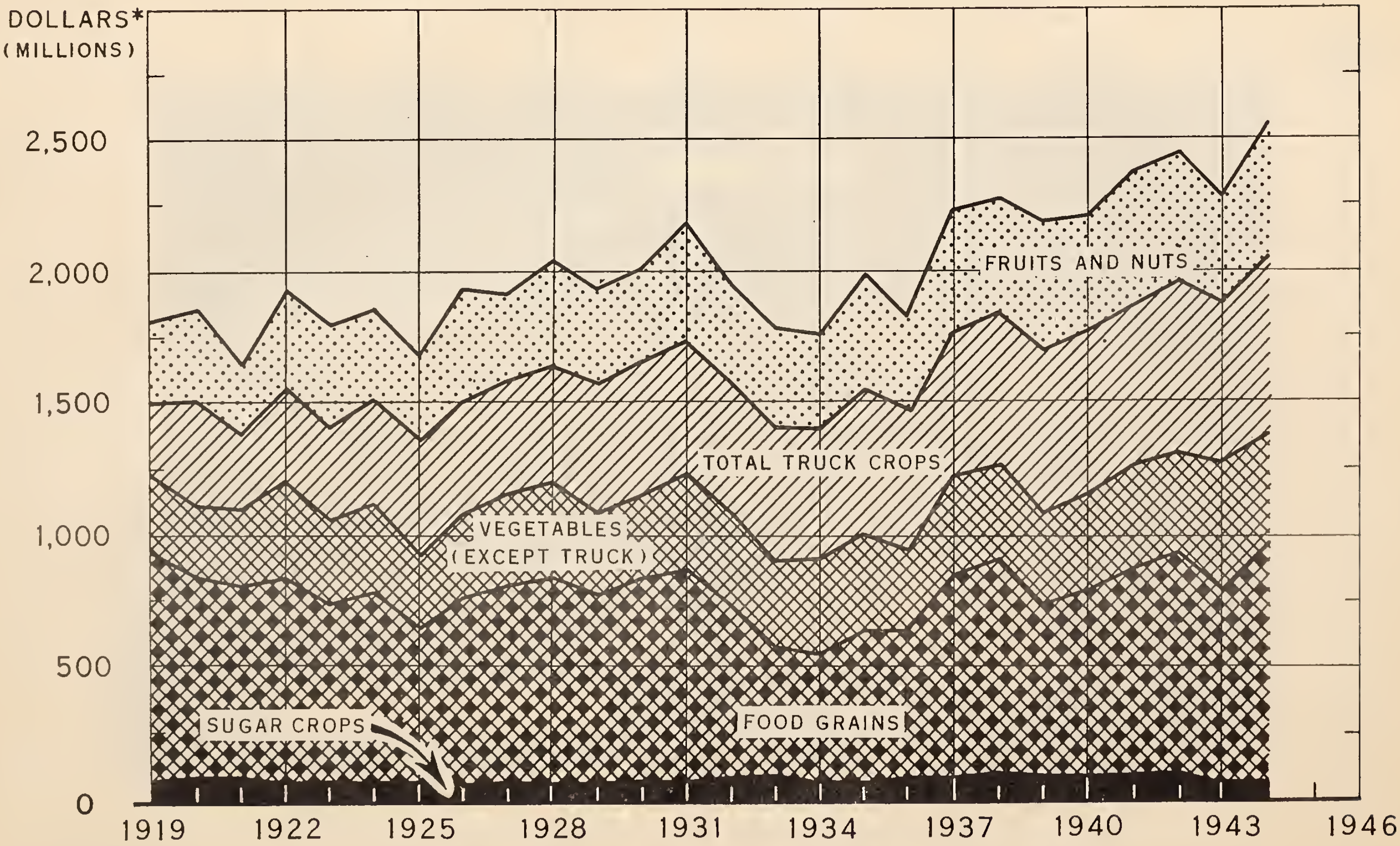
Figure 13.- The feed base for United States livestock production remained relatively constant from 1919 to the drought period of 1934-36. Feed production expanded sharply during wartime. Corn is by far the most important feed crop, while pasture production is almost as great as hay production.

VOLUME OF FOOD CROPS PRODUCTION, BY GROUPS, UNITED STATES, 1919-44
(PRODUCTION MEASURED IN 1935-39 AVERAGE DOLLARS)



*1935-39 AVERAGE DOLLARS

DATA FOR 1944 ARE PRELIMINARY

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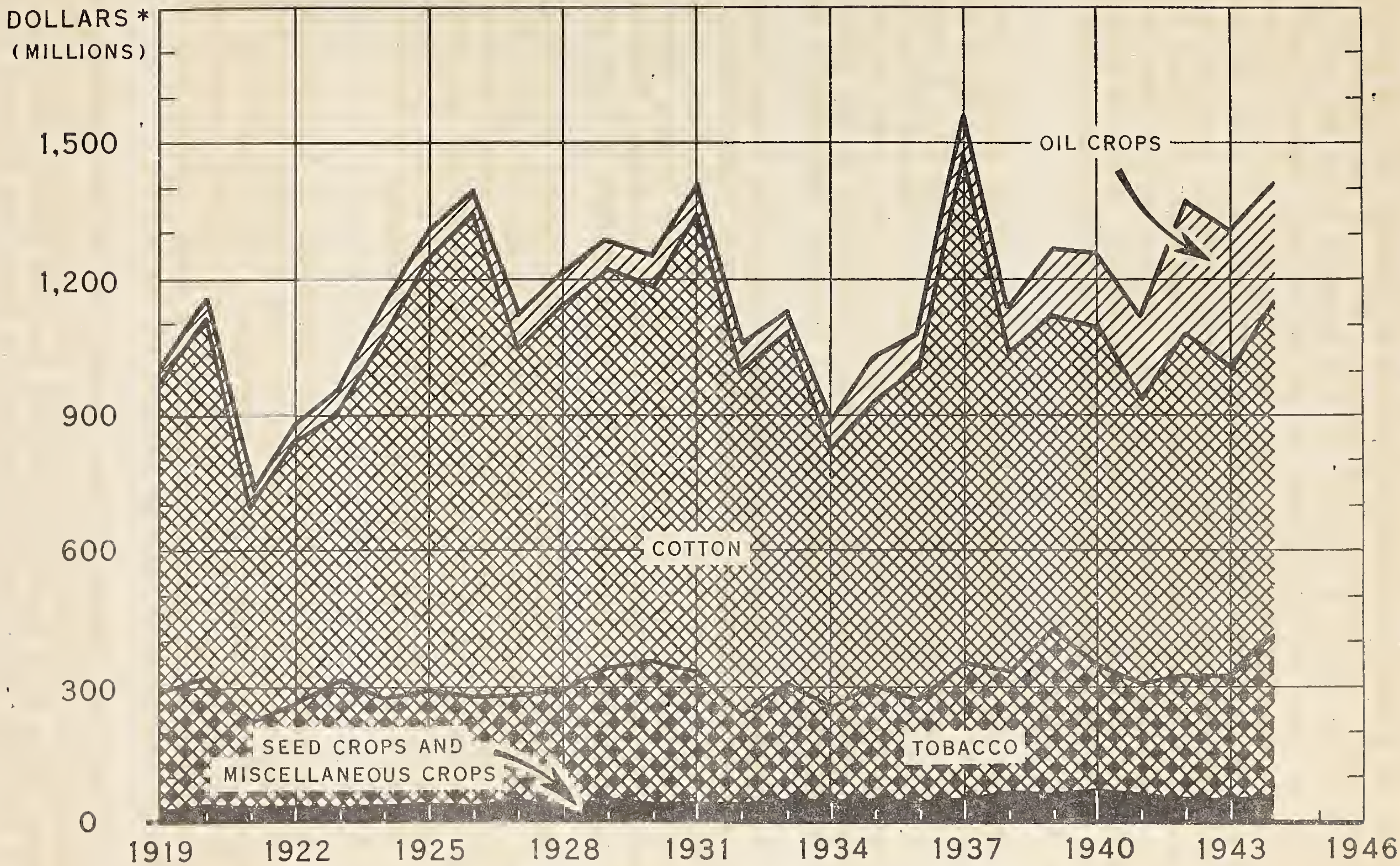
Figure 14.- Steady increases in the volume of production of truck crops, and fruits and tree nuts have dominated the food crops production picture since World War I.

VOLUME OF PRODUCTION OF COTTON, TOBACCO, OIL CROPS, AND MISCELLANEOUS CROPS, UNITED STATES, 1919-44
(PRODUCTION MEASURED IN 1935-39 AVERAGE DOLLARS)



*1935-39 AVERAGE DOLLARS DATA FOR 1944 ARE PRELIMINARY

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Figure 15.- Oil-crops production has been steadily gaining in relative importance since 1919, and had the greatest wartime rate of increase of any crop group. Cotton production has fluctuated greatly since World War I but has shown a relatively flat trend as has tobacco production.

21.8 percent of the total during the first 5 years of the period, 1919-23. Production of poultry products increased an average of 3.8 percent per year since 1919, and made up 19.3 percent of total livestock production in the last 5 years and 14.1 percent in the first 5 years of this period. Production of meat animals showed no definite trend upward until the years immediately preceding World War II. However, meat animals apparently got a substantial part of the feed resources that were released by declining horse and mule numbers. During 1940-44, meat-animal production amounted to 40.1 percent of total livestock production compared with 34.6 percent in 1919-23. Meat-animal production in 1944, while greater than in 1942, was below the 1943 peak. Wool and mohair production, although relatively small compared with other livestock production, had a definite upward trend for the entire period.

Except for the serious inroads of the drought years, 1934 and 1936, the total livestock feed base of United States farms remained fairly constant during the peacetime years preceding World War II. A marked increase in the feed base occurred during the war period, however (fig. 13). Feed-grain production during the war was stepped up at a more rapid rate than hay and pasture production. This in turn was reflected in the large wartime increase in production of poultry and meat animals, principally hogs.

Production of food crops, although exhibiting marked year-to-year fluctuation, moved distinctly upward in the peace years between the two wars (fig. 14). Substantial increases were also registered during the World War II period in all food groups, except the sugar crops. More significant than the increase in total production of the food crops, however, were the changes in relative importance of the various groups of food crops.

Not only did truck-crop production—commercial vegetables, market gardens, and farm gardens as a group—double during the years from 1919-23 to 1940-44, but in the latter 5 years truck-crop production accounted for over 26 percent of all food crops production as against 18 percent in the first 5-year period. The relative production of fruits and nuts increased during the same period from 18 percent to 20 percent of total food-crop production.

These increases in the relative importance of truck-crops and fruits and nuts production were accompanied by some decrease in the relative importance of production of other vegetables, and considerable decrease in the relative position of food grains. During 1919-23 production of food grains amounted to 41 percent of total food crops production, but by 1940-44 food grains represented only 34 percent of the total.

Of the other important crop groups, oil crops—peanuts, soybeans, and flaxseed—showed the sharpest increase in production, especially during the war years (fig. 15). Production of oil crops in 1935-39 was over 2½ times that in 1919-23; 1943 peak production, in turn, was 3 times that of 1935-39. Oil-crop production at the end of World War I was small compared with the production of all crops shown in figure 15. At that time, 1919-23, the combined production of peanuts, soybeans, and flaxseed amounted to less than 4 percent of the total, but during 1940-44 production of these crops was nearly 19 percent of the total. Cotton and tobacco, on the other hand, decreased in relative importance—cotton from 66 percent of the total in 1919-23 to 55 percent in 1940-44, and tobacco from 27 percent of the total in the earlier period to 22 percent in the last 5 years.

WARTIME INCREASES IN GROSS FARM PRODUCTION

National gross farm production in 1944 was 124 percent of its 1935-39 prewar base; in 1943 it was 119 percent of the base. Farm-product groups and geographic divisions of the United States contributed in varying proportions to this highly important wartime production increase.

Regional Wartime Production Increases

The contribution of each geographic division to the total wartime production increase can be seen from the data in tables 5 and 6. The 12 North Central States produced an average of 42 percent of national gross production in the base period, 1935-39, and as a group accounted for 58 percent of the 1944 increase above the base period (table 5). All divisions registered some wartime increase in gross farm production. But even though an important part of the wartime increase in production in the West North Central division represented a recovery from the low production level that prevailed in the division during the drought period of the middle thirties, the wartime production record of the West North Central division is outstanding. The 7 West North Central grain and livestock States alone contributed about one-half of the wartime production increase in 1943 and 1944, although they were responsible for little more than one-fifth of the average United States gross production in 1935-39.

Table 5.- Relative importance of farm production in each geographic division in the base period, 1935-39, and relative importance of 1944 increases in production over base period

Geographic division 1/	Gross farm production		Product added by all livestock		Crop and pasture production	
	1935-39 base period	Increase 1935-39 to 1944 2/	1935-39 base period	Increase 1935-39 to 1944 2/	1935-39 base period	Increase 1935-39 to 1944 2/
	Percent	Percent	Percent	Percent	Percent	Percent
New England	2	1	4	3	2	0
Middle Atlantic	8	2	11	4	6	1
East North Central	20	12	23	20	18	8
West North Central	22	46	25	33	20	52
South Atlantic	12	9	8	12	14	7
East South Central	9	5	7	7	10	4
West South Central	12	10	9	10	14	11
Mountain	6	7	6	5	6	8
Pacific	9	8	7	6	10	9
United States	100	100	100	100	100	100

1/ See footnote 1, table 1.
2/ Preliminary.

Table 6.- Changes in gross farm production, by geographic divisions, 1935-39 average to 1944 1/
(Production measured in 1935-39 average dollars)

Item	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	United States
					Million dollars					
Changes in:										
Gross farm production	25.4	45.2	255.8	989.3	185.8	105.5	218.5	156.4	172.7	2,154.6
Product added by all livestock	22.1	26.8	136.0	222.0	77.6	43.3	64.9	36.0	40.8	669.5
Product added by meat animals and animal products	23.9	32.7	158.8	245.4	78.9	42.9	74.6	38.3	44.5	740.0
Product added by horses and mules	- 1.8	-5.9	-22.8	-23.4	- 1.3	.4	- 9.7	- 2.3	- 3.7	-70.5
Crop and pasture production	3.3	18.4	119.8	767.3	108.2	62.2	153.6	120.4	131.9	1,485.1
Food grains	---	1.7	-10.3	127.1	8.9	3.3	76.4	36.8	13.5	257.4
Feed grains and hay	- 5.3	5.9	56.1	537.9	14.2	15.1	64.2	44.0	20.5	752.6
Cotton (lint and seed)	---	---	---	5.5	- 7.3	8.2	-41.7	- 3.7	- 8.1	-47.1
Oil bearing crops	---	.8	59.1	58.0	15.4	8.2	15.4	2.5	3.3	162.7
Tobacco	1.5	1.5	.5	.5	45.2	22.4	---	---	---	71.6
Truck crops	- .8	11.3	12.3	6.2	18.3	5.8	24.3	13.3	33.1	123.8
Fruits and tree nuts	-2.5	- .9	2.3	- 4.1	11.0	- 2.2	5.5	1.9	47.0	58.0
Vegetables (except truck)	10.3	- 4.7	-16.0	1.8	- 4.3	- .9	3.4	22.8	21.2	33.6
Sugar crops	- .3	0	- 3.2	- 1.9	.7	- .7	- .9	- 6.1	- 3.4	-15.8
Seed crops	---	.1	3.1	5.7	2.3	- .2	.9	- 1.6	- .3	10.0
Miscellaneous crops	---	---	---	---	- 1.2	- 1.3	-1.2	---	1.6	- 2.1
Pasture used by livestock	.4	2.7	15.9	30.6	5.0	4.5	7.3	10.5	3.5	80.4
					Percent of United States total					
Gross farm production	1	2	12	46	9	5	10	7	8	100
Product added by all livestock	3	4	20	33	12	7	10	5	6	100
Crop and pasture production	---	1	8	52	7	4	11	8	9	100

1/ See footnote 1, table 1. Data for 1944 are preliminary.

Divisional patterns of increases in wartime livestock production were somewhat similar to those in crop production. Here again the productive West North Central States in 1944 accounted for one-third of the national increase in livestock production, although contributing only one-fourth of total livestock production in 1935-39. Likewise, it was the West North Central division that accounted for more than one-half of the wartime increase in crop and pasture production, compared with its production of one-fifth of the United States total in 1935-39. The relative contribution from this division for all three production groups—gross production, product added by livestock, and gross crop and pasture production—was even larger in 1943 than 1944. As noted previously, part of the large wartime increases reflected recovery from a low level in 1935-39.

Commodity Wartime Production Increases

Increases in livestock production and in its feed base, and increased production of oil crops, overshadow increases in other commodity groups in the wartime production expansion (table 6). Product added by meat animals and animal products accounted for less than one-fourth of all farm production in 1935-39, but contributed more than 40 percent of the 1943 production increase over the 1935-39 average and almost 35 percent of the 1944 increase over the base period. The feed-grains and hay-crop group made up 29 percent of total gross production in 1935-39, and accounted for 36 percent of the 1943 increase, and 35 percent of the 1944 increase, from the base period. Peanuts, soybeans, and flax as a group contributed only 1 percent of total farm production in the 1935-39 base period. Yet wartime production increases over the base average of these three oil crops accounted for 12 percent of the total 1943 production increase and 8 percent of the 1944 increase. Food grains, truck crops, vegetables except truck, and pasture used by livestock also made substantial contributions to the wartime increase in farm production.

Wartime increases in total gross production are all the more remarkable in view of the fact that one-half of the commodity groups shown in table 6 recorded some decrease in production in 1944 compared with the 1935-39 average. Most of these groups exceeded their base-period production during at least one of the war years, however, and for the war years as a whole more or less held their own.

FACTORS RESPONSIBLE FOR WARTIME INCREASES IN FARM OUTPUT

Table 7 contains an estimate of the most important causes underlying the wartime increase in farm output and indicates the relative importance of each cause. Farm output—which excludes farm-produced power and measures change in farm production available for human use—was 29 percent greater in 1944 than in the 1935-39 base years. This increase was made possible because of a combination of circumstances. The transfer of farm labor, land and capital from farm-produced power to production of meat and animal products, and crops for human use was responsible for 7 percent of the increase in farm output, or 2 points of the 29-point increase in the farm-output index. An increase in the amount of "product added" by livestock and products for human use accounted for about 30 percent of the increase in farm output, or 9 out of 29 index points.

A 6-percent expansion in the acreage of harvested cropland made possible 14 percent of the production increase, and the increase in volume of pasture used by livestock added another 3 percent. In index terms, the contribution of the increase in harvested cropland was 4 points, and of pasture used by livestock, 1 point.

Table 7.- Approximate importance of factors responsible for increase in farm output, 1944 1/ over 1935-39 average

Item	Index points		Percent	
Decrease in farm-produced power production		2		7
Increase in production of meat animals and animal products 2/		9		31
Increase in pasture used by livestock		1		3
Increase in harvested cropland acreage		4		14
Increase crop production per acre--total		13		45
Increased crop production per acre because of increase in fertilizer use	4		14	
Increased crop production per acre because of more favorable weather than in 1935-39	5		17	
Increased crop production per acre because of improved varieties, e.g., hybrid corn, soil improvement practices, and other	3/4		3/14	
Total		29		100

1/ Preliminary.
2/ More favorable weather in 1944 than in 1935-39 was indirectly responsible for part of this increase in product added by livestock. Increased feed crop production due to more favorable weather made possible part of the wartime expansion in livestock production.
3/ From one-half to two-thirds is attributable to increased use of hybrid seed corn.

The significance of greater crop production per acre during the war is shown by the 45 percent of farm output increase, or 13 index points, attributable to the increase in crop production per acre of cropland harvested in 1944 compared with the 1935-39 average. Three types of developments shared about equally in bringing the increase in crop production per acre. More than half again as much fertilizer was used on United States farms in 1944 as was utilized in 1935-39. Weather was more favorable for crop and pasture production in 1944 than in the drought-affected 1935-39 base period. Greater use of improved varieties of seed, particularly hybrid seed corn, contributed decidedly to the wartime increase in production per crop acre. Also, more careful harvesting methods, under the stimulus of high wartime prices for farm products, probably added to the average output per crop acre in 1944, compared with the 1935-39 average.

If the farm-production record of other years during World War II were examined, the relative importance of the factors which contribute to increases in farm output would be somewhat different than was true in 1944. Crop yields, for example, were higher in 1942 than in 1944. Favorable weather might be assigned a higher percentage rating as a causal factor in 1942 output, but increase in harvested cropland, on the other hand, would be a less important causal factor in 1942 than in 1944. Increased crop production per acre, however, was the dominant primary factor underlying increases in production and output throughout the war period.

WARTIME AND PEACETIME FARM EMPLOYMENT AND GROSS PRODUCTION AND OUTPUT

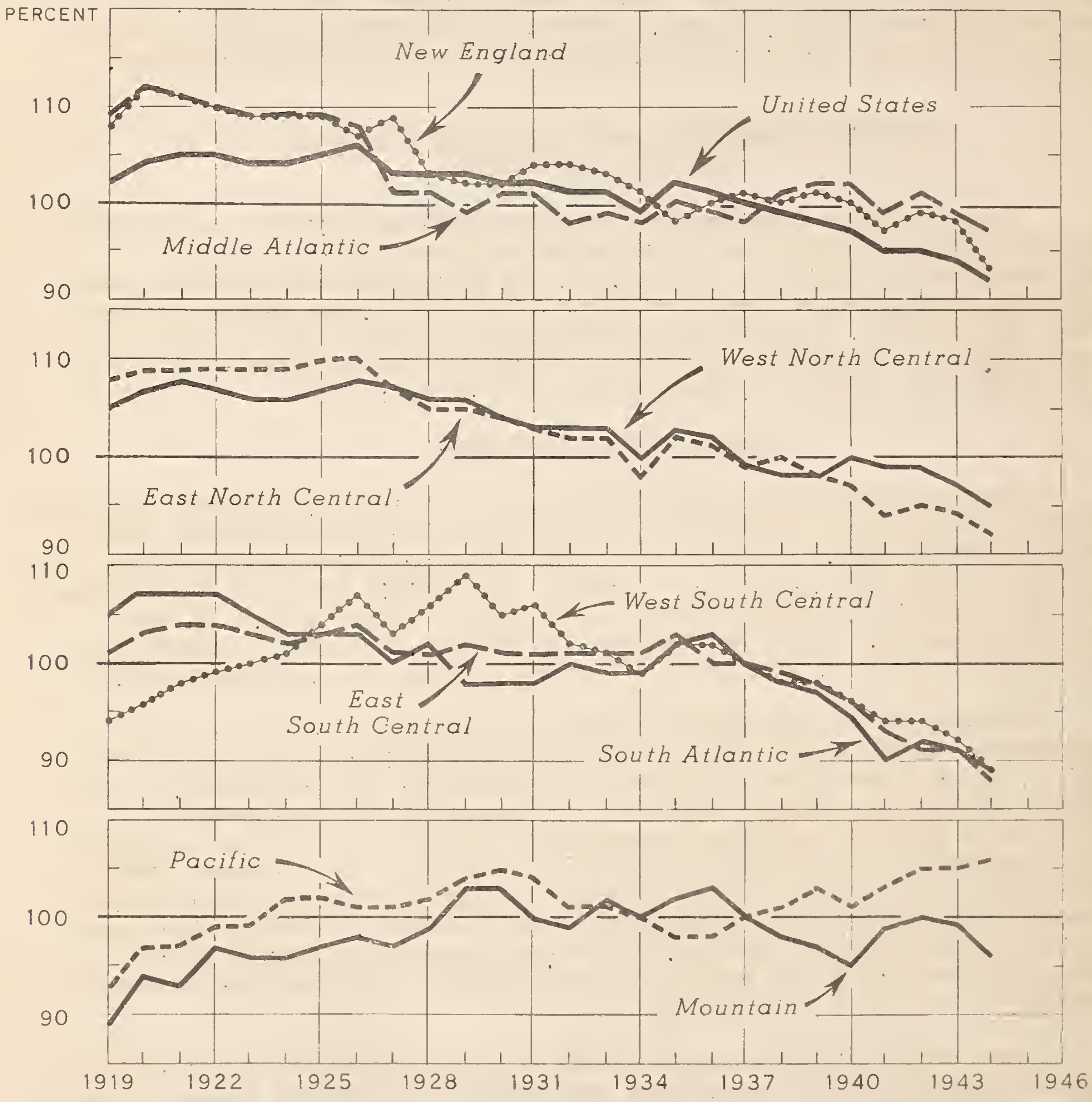
Market wartime increases in farm production are all the more remarkable in view of continuation of the long-time downward trend in farm employment during World War II (fig.16). In 1942 farmers produced 22 percent more gross product than they averaged in 1935-39, and with 5 percent fewer farm workers. In 1943 and again in 1944 remarkably high levels of production were attained in the face of receding farm employment, which by 1944 amounted to only 92 percent of the 1935-39 average.

Trends in Farm Employment

Farm employment in the two North Central divisions, the South Atlantic division, and the two Northeastern divisions has declined throughout the 25 years following 1919. In all of the three Southern divisions the decline has been sharp since 1936, but in the Mountain and Pacific divisions farm employment has been higher during the war years than it was in 1919. All geographic divisions, except the Mountain and Pacific, registered more or less continuous declines in employment after 1939, and as the war progressed.

Several factors underlie the long-and short-time trends in farm employment. In the first place, changes in farm employment do not necessarily reflect corresponding changes in requirements for farm labor. Periods of general economic depression or prosperity and accompanying variation in nonfarm employment opportunities affect not only the level of farm population but the number of persons reported as farm workers. The 1935-39 base period used in this report, for example, covers a period when there was considerable underemployment of farm workers. Much of this slack has been taken up during wartime, however, and in most areas farmers and their families worked more hours per day in wartime than they can or should continue to do over a period of years.

Even though the year-to-year level of farm employment is affected by general employment conditions, other more direct agricultural factors have influenced materially the long-time trends in number of farm workers. Most important was the increase in mechanization of farm operations during the last quarter-century. Less time is required to repair and maintain tractors, trucks, and automobiles than to care for the horses and mules that were replaced. Even more important is the increase in speed with which farm jobs can be done as tractors and other labor-saving machines replace horses and



INDEX NUMBERS OF AVERAGE ANNUAL FARM EMPLOYMENT, BY GEOGRAPHIC DIVISIONS, 1919-44

(1935-39=100)

EMPLOYMENT INDEXES COMPUTED FROM BAE REPORTS 1925-44. GEOGRAPHIC DIVISION ESTIMATES 1919-24 BASED ON DATA FROM HOPKINS, JOHN A. CHANGING TECHNOLOGY AND EMPLOYMENT IN AGRICULTURE

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Figure 16.- Farm employment in the United States has shown a downward trend since 1926, with the greatest decrease occurring in the North Central divisions where farm mechanization advanced most rapidly. The upward trend in employment during the twenties and the tendency toward increases thereafter in the Pacific division are associated with the increasing emphasis given to fruit and truck-crop production in the division. Sharpest wartime decreases in farm employment took place in the Southern divisions.

mules, horse and mule equipment, and hand methods. Thus, as mechanization increased, the ability of farm workers to produce was enhanced greatly and as farm workers could do the same job in much less time, fewer workers were needed and employed.

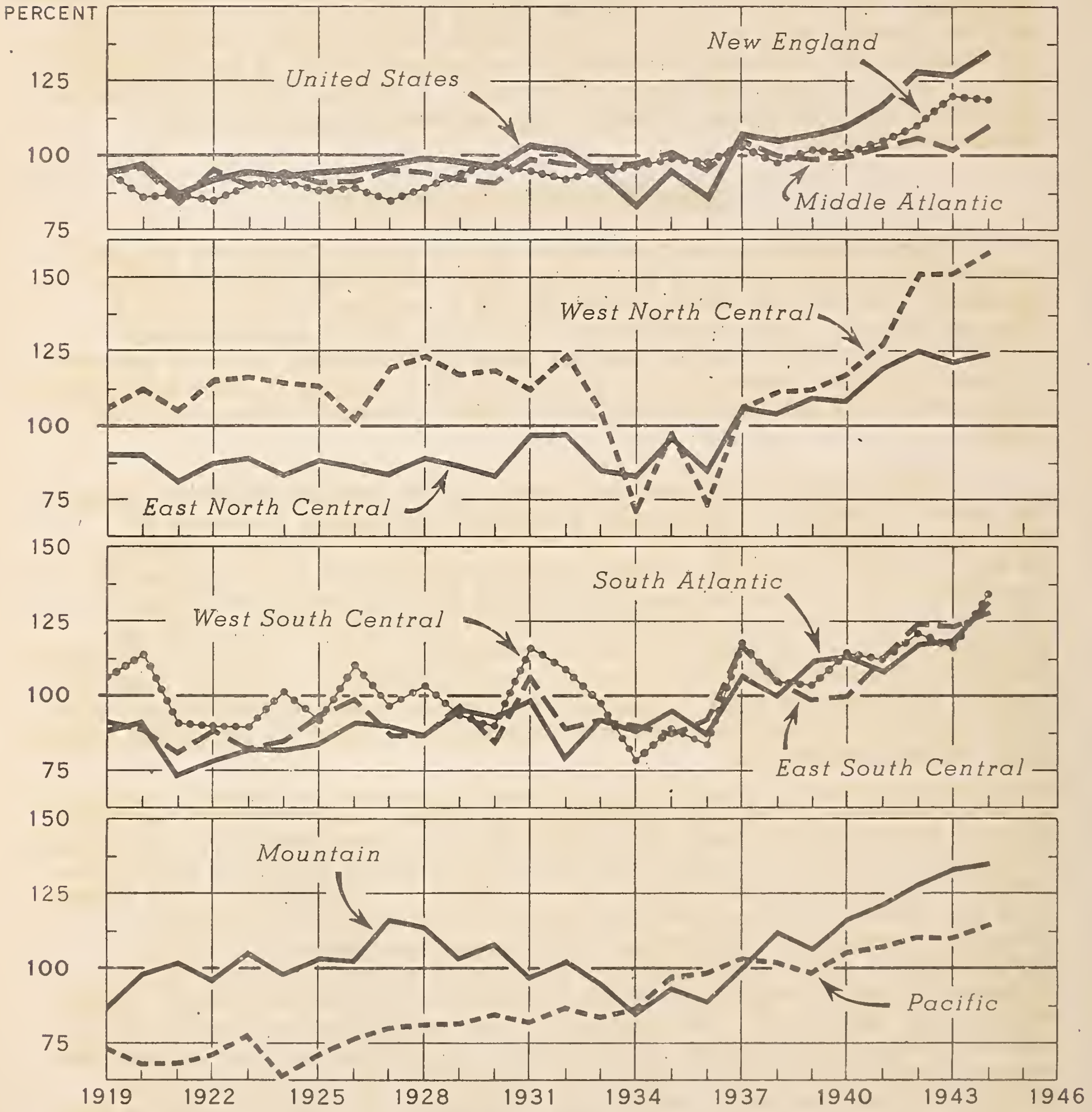
In the Pacific division the trend in farm employment was more closely associated with the trend in gross farm production than was true in other divisions. The increase in gross production in the Pacific division was weighted heavily with fruits and truck crops which require much hand labor. The accompanying increase in farm-labor requirements was in turn reflected in the level of farm employment in the area. A similar association between production and employment, although less pronounced, exists in the Mountain division.

Gross Production Per Worker 7/

Gross production per farm worker in the United States was 14 percent greater in 1939 than in 1919 (fig. 17). This came about by an increase of 9 percent in gross production and a decrease of 4 percent in farm employment. In the fourth year of the war (1944) production per worker was 26 percent greater than in 1939, as the result of an 18 percent increase in gross production and a decrease of 6 percent in farm employment. Gross production per worker in 1944 was about 44 percent greater than in 1919.

Although farm employment was upward in the Pacific division during the period between the wars, gross production per worker increased by more than one-third (table 8). This was the largest increase registered in any geographic division. Owing to the influence of drought years on the 1935-39 base, a comparison of 1939 with 1919 best measures prewar changes in production per worker in all geographic divisions except the Mountain which had an abnormally low production in 1919. The South Atlantic, East North Central, East South Central, and New England divisions recorded decided increases in gross production per worker during the interwar period, while the Middle Atlantic, West North Central, and Mountain divisions showed only moderate increases.

7/ The indexes of gross farm production per worker do not measure directly changes in the effectiveness with which the farm labor was used. The amount of gross production per worker on farms has increased because a larger proportion of many farm jobs is now done by town and city workers. The production per worker has been increased also by substitution of city-made tractors, trucks, and automobiles for farm-produced horses and mules. Furthermore, a part of the increase in production per worker can be attributed to better seeds, use of more fertilizer and soil-conserving practices, etc. All in all, the indexes of gross production per worker can be said to measure only changes in quantity of production per farm worker that emerges from agriculture. They do not imply that the present-day farm worker uses the same tools or the same techniques, or that he performs the same operations per unit of product as did the farm workers of previous periods.



INDEX NUMBERS OF GROSS FARM PRODUCTION PER WORKER, BY GEOGRAPHIC DIVISIONS, 1919-44
(1935-39=100)

DATA FOR 1944 ARE PRELIMINARY

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Figure 17.- The long-time upward trend in gross farm production per worker was greatly accelerated during World War II in every division. The most steady upward trend for the entire period, 1919-44, occurred in the Pacific division.

Table 8.- Percentage change per farm worker in gross farm production and farm output, by geographic divisions

Geographic division 1/	Change in gross farm production per worker			
	1919-23 to 1935-39	1919 to 1939	1935-39 to 1944 2/	1939 to 1944 2/
	Percent	Percent	Percent	Percent
New England	14	9	19	17
Middle Atlantic	9	5	10	11
East North Central	15	21	24	14
West North Central	- 10	6	58	41
South Atlantic	22	27	31	17
East South Central	16	9	28	29
West South Central	2	- 2	34	29
Mountain	2	22	35	27
Pacific	41	36	14	15
United States	8	14	35	26

Geographic division 1/	Change in farm output per worker			
	1919-23 to 1935-39	1919 to 1939	1935-39 to 1944 2/	1939 to 1944 2/
	Percent	Percent	Percent	Percent
New England	27	23	23	19
Middle Atlantic	20	20	13	13
East North Central	27	39	30	17
West North Central	- 1	24	69	47
South Atlantic	33	43	35	19
East South Central	28	21	32	35
West South Central	12	7	41	36
Mountain	16	49	39	30
Pacific	52	49	16	16
United States	19	30	40	30

1/ See footnote 1, table 1.
2/ Data for 1944 are preliminary.

The greatest wartime increase in gross production per farm worker occurred in the productive and highly mechanized West North Central division. Large wartime gains were also registered in the Mountain, East South Central, West South Central, and South Atlantic divisions. Smaller wartime gains occurred in the other divisions.

The wartime advance in production per farm worker is the climax of the story of production increases. Wartime production per worker in 1944 was 26 percent greater than in 1939, a gain in 5 years that was almost double the gain in the previous 20 years.

Farm Output Per Worker

Although national gross farm production per worker was 44 percent greater in 1944 than in 1919, farm output per worker had increased nearly 70 percent during the same period. In either case a goodly part of the increase per worker was due to displacement of work animals by farm tractors and tractor tools, farm trucks, and automobiles, which enabled a farm hand to do more work in a given time.

The greater increase in output per worker, compared with gross production per worker, however, is partly owing to greater volume of product added from use of feed when it is consumed by poultry, hogs, and cattle rather than by horses and mules. Thus, in terms of 1935-39 average dollars, farmers as a group got more for their "horse feed" when it was used to produce livestock and livestock products for human consumption than when used to produce farm power. Furthermore, production of food for human use increased faster than gross production because the feed diverted from workstock was used to produce a greater volume of livestock and livestock products for human consumption.

The 25-year increase of nearly 70 percent in farm output per worker for the United States is the result of an increase of 52 percent in total farm output and a decrease of 10 percent in farm employment. About 60 percent of the 25-year decrease in farm employment came in the period, 1939-44, and 52 percent of the increase in total farm output and 68 percent of the increase in total gross production came in the same period.

SIZE AND NATURE OF THE WARTIME FARM LABOR JOB 8/

Additional wartime farm production was obtained in the 3 high production years, 1942-44, with less than proportional increases in man-labor requirements. Although gross farm production during these 3 years

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8/ Since data on man-hour requirements are not available for years before 1939, the analysis in this and following sections necessarily uses 1939 as a prewar base.

averaged 15.8 percent above that of 1939, man-hour requirements were increased an average of only about 3.5 percent (tables 9 and 10). 9/

Livestock man-hour requirements increased by less than half as much as did livestock production during the period 1939-44. Labor requirements for crop production were actually less in 1943 than in 1939, but crop production had increased by 10 percent. Differences between labor requirements and production for some of the crop groups are even greater.

Man-labor requirements of farm production in 1939 were about 20.5 billion hours. The wartime job in 1944 required about 21.2 billion hours—over 700 million more man hours than in 1939. If the increase in labor requirements had been proportional to the increase in farm production, 1944 man-hour requirements would have been 24.2 billion hours, or 3.7 billion more hours than in 1939. Thus, the 1944 farm production required about 3 billion fewer man hours than might have been expected under conditions of mechanization and production similar to those of 1939. The explanation of how this apparent "saving" of 3 billion hours came about is the story of the labor efficiency of the wartime farm-production increase.

9/ Man-hour requirements for each year were based on the time required by average adult males to perform various farm tasks. In making the estimates of total man-hour requirements for farm production in 1939 and the later war years, annual changes in production and in farm mechanization were considered. Probable reductions in hours per acre of crop production because of increased farm mechanization as the war progressed were estimated. Increased use of milking machines were particularly effective in saving labor on dairy farms.

Increased yields per acre added little to preharvest labor requirements, and little to the harvest requirements for grains harvested with combines, and corn harvested with mechanical pickers. On the other hand, increased yields per acre of cotton, vegetables, fruits, and other crops that required much hand labor for harvesting added to the labor requirements. Increases in the size of livestock enterprises per farm generally were assumed to require somewhat less labor per unit of production than in 1939.

Table 9.- Index numbers of man-hour requirements and gross farm production, United States, 1939-44
(1939 = 100)

Item	Index of man-hour requirements 1/			Index of gross farm production		
	1942	1943	1944 2/	1942	1943	1944 2/
Meat animals and animal products	110.1	113.0	111.5	118.4	127.3	125.7
Horses and mules	92.8	90.4	86.7	92.2	89.3	85.8
Total livestock	107.7	109.8	108.0	114.8	122.2	120.2
Feed grains	101.2	103.5	103.6	126.4	117.6	124.9
Hay	107.9	109.0	107.4	120.3	113.5	110.8
Cotton	101.2	91.2	91.0	108.5	96.8	104.7
Tobacco	71.0	71.9	91.3	74.5	74.1	97.3
Food grains	92.9	91.7	105.1	130.4	111.9	142.0
Sugar crops	98.7	84.6	81.9	104.9	77.2	78.1
Truck crops	102.2	99.3	103.2	103.5	99.3	110.8
Vegetables except truck	100.3	123.9	103.7	113.0	137.8	114.2
Fruits and nuts	101.0	96.1	96.1	101.4	88.0	102.3
Oil crops	179.3	196.3	164.0	205.5	218.6	187.1
Total crops 3/	100.8	99.4	100.5	117.2	110.0	117.8
Farm maintenance and other miscellaneous work 4/	102.0	103.0	104.0	---	---	---
Total	103.3	103.5	103.6	116.1	113.5	117.9

1/ Man-hour requirements are in terms of time required by average adult males to do various farm tasks. As many women and children do less work in an hour than an average adult male, actual hours of work required are in excess of those shown in this table.

2/ Preliminary.

3/ The man-hour index and production for "total crops" include labor requirements and production of certain miscellaneous crops not shown separately.

4/ This kind of work—about 15 percent of the work needed for farming—includes labor spent on fencing, repairs to buildings, machinery and equipment, farm woods, pastures, general land maintenance, farm business and other miscellaneous work. Some of this work probably has been postponed during wartime because of scarcity of labor.

Table 10.- Estimated man-hour requirements of gross farm production, United States, 1939 and 1942-44

Item	Man-hour requirements 1/				Index numbers (1939 = 100)		
	1939	1942	1943	1944 2/	1942	1943	1944 2/
	Million hours	Million hours	Million hours	Million hours			
Milk	3,452	3,674	3,609	3,640	106.4	104.5	105.4
Cattle and calves	617	705	730	741	114.3	118.3	120.1
Hogs	545	640	746	623	117.4	136.9	114.3
Sheep, lambs and wool	248	274	256	237	110.5	103.2	95.6
Poultry	992	1,168	1,292	1,301	117.7	130.2	131.1
Total meat animals and animal products 3/	5,983	6,590	6,762	6,671	110.1	113.0	111.5
Horses and mules	994	922	899	862	92.8	90.4	86.7
Total livestock	6,977	7,512	7,661	7,533	107.7	109.8	108.0
Corn	2,480	2,448	2,542	2,553	98.7	102.5	102.9
Other feed grains	671	740	720	710	110.3	107.3	105.8
Hay	840	906	916	902	107.9	109.0	107.4
Cotton	2,198	2,225	2,005	2,001	101.2	91.2	91.0
Tobacco	803	570	577	733	71.0	71.9	91.3
Wheat	461	413	414	495	89.6	89.8	107.4
Other food grains	92	101	93	86	109.8	101.1	93.5
Sugar crops	227	224	192	186	98.7	84.6	81.9
Truck crops	1,118	1,143	1,110	1,154	102.2	99.3	103.2
Vegetable except truck	326	327	404	338	100.3	123.9	103.7
Fruits and nuts	771	779	741	741	101.0	96.1	96.1
Oil crops	242	434	475	397	179.3	196.3	164.0
Other crops	159	159	137	141	100.0	86.1	88.7
Total crops	10,388	10,469	10,326	10,437	100.8	99.4	100.5
Farm maintenance and other miscellaneous work 4/	3,089	3,151	3,181	3,212	102.0	103.0	104.0
Total of all farm work	20,454	21,132	21,168	21,182	103.3	103.5	103.6

1/ See table 9, footnote 1.

2/ Preliminary data.

3/ Labor requirements of certain miscellaneous livestock and livestock products are included but not shown separately.

4/ See table 9, footnote 4.

Causes of More Production With Fewer Man Hours

The broad groups of factors responsible for the labor efficiency of our wartime farm-production increase, and the relative importance of each are indicated in table 11. The most important single item is the increase in crop production per acre. Through an increase in crop yields a given amount of production can be had from fewer acres of land. As a result, much preharvest crop labor is saved compared with what would be needed if the production were obtained from more acres at lower average yields. Thus, the acreage of cropland harvested was about 9 percent greater in 1944 than in 1939, but crop production was 18 percent greater. This means that production per harvested acre increased about 8 percent; and if this increase had been obtained by planting and tending extra acres, about 700,000,000 more preharvest hours would have been required than were used in 1944.

Increased production per acre makes possible certain savings in harvest labor as well as in preharvest labor. Particularly in the case of crops whose harvest operations are more-or-less mechanized (combines in wheat; mechanical pickers in corn), an increase in yield does not result in a proportional increase in hours required for harvesting. On the other hand, little if any savings in harvest labor result from increased yields of such crops as cotton, tobacco, or truck crops whose harvest requires primarily hand labor, but altogether, the wartime pattern of increases in crop production was such that around 300,000,000 fewer harvest hours were used than if the increased production had been gotten from additional acres. These increased labor efficiencies, preharvest and harvest combined, amounted to one-third of the total increase in all labor efficiencies in 1944 compared with those in 1939.

Increased mechanization of crop and livestock operations in 1944 compared with 1939 accounted for another 22 percent of the total labor savings. This means that farmers during wartime got more out of the labor-saving machines they had in their inventories and these savings were added to those that resulted from wartime increases in numbers of some important labor-saving machines. Tractors increased by one-fourth from 1940 to 1944 and milking machine installations nearly doubled. During the same period mechanical corn pickers increased by one-third and grain combines by over one-half. Other tractor-operated machines also increased in number and more custom work further added to their effectiveness as labor savers.

The labor savings resulting from the composition of the increased farm production were about the same as the savings from increased mechanization. Put briefly, we increased most those kinds of livestock and crops which require a relatively small amount of labor per unit of production. The importance of this shift to more "labor extensive" enterprises during wartime can be seen by examination of table 12. Poultry products, hogs, and cattle and calves accounted for about four-fifths of the increase in livestock production in the period 1939-44, dairy products accounted for about one-fifth, and sheep and lamb production decreased a little. But the former group of livestock products, which largely accounted for the production increase, use an average of only about one-third as much labor per unit of production as do dairy products. As livestock-production increases contributed nearly one-half of the increase in all gross

Table 11.- Approximate importance of factors responsible for "labor savings" in wartime gross farm production, 1944 compared with 1939

Item	Index points 1/	Percent	Millions of man hours
Saving of preharvest crop labor because of increased crop production per acre	3.3	23	700
Saving of harvest crop labor because of increased crop production per acre	1.4	10	300
Saving because of increased mechanization including decrease in horse and mule numbers	3.1	22	650
Shifts to less labor-intensive livestock and crop enterprises	3.1	22	650
"Spreading" of overhead and miscellaneous labor over larger production	2.2	15	450
Saving in livestock labor because of increase in size of livestock enterprises	1.2	8	250
Total	14.3	100	3,000

1/ The index of farm production (1939 = 100) was 117.9 for 1944. The difference between this index and the man-hour requirements index of 103.6 is 14.3 index points.

farm production from 1939 through 1943, and about one-third from 1939 through 1944, the importance of this shift in composition of livestock production as a "labor saver" is apparent. All livestock exclusive of horses and mules required over 260 man hours per unit of production in 1939, but because of the shift to less labor consuming livestock each unit of increase from 1939 through 1944 required only about 215 hours, or 80 percent as much.

The shift in composition of crop production resulted also in greater labor efficiency. Feed grains contributed more to the increase in total gross production than any other crop group. Yet feed grains required only half as much labor per unit of production as did cotton, which increased slightly. The general tendency was for crops with the lower labor requirements per unit of production to contribute most heavily to the farm-production increase (table 12).

General farm-maintenance work accounted for about 15 percent of total farm-labor requirements in 1939. Maintenance work includes such items as building and fence repair, machinery repair, and work on woodlands and pastures. An increase in farm production, although adding somewhat to the labor required by some of these items, does not result in an increase in general maintenance-labor requirements proportional to the increase in production. Rather, the bulk of the maintenance-labor requirements is spread over a larger volume of production. This situation is another important factor in explaining the labor efficiency of wartime production increases.

Table 12.- Wartime changes in production in relation to man-hour requirements per unit of production, specified commodities, 1939-44 1/

Item	Net change in production 1939-44	Man-hour requirements per unit of production in 1939 3/
	Million dollars 2/	Hours
Feed grains	504	155
Food grains	274	85
Poultry products 4/	236	166
Cattle and calves 4/	145	130
Dairy products 4/	129	440
Oil crops	122	172
Hay	84	108
Hogs 4/	75	158
Truck crops	67	181
Vegetables except truck	48	97
Cotton	32	315
Sugar crops	21	240
Fruits and nuts	11	161
Sheep, lambs, and wool 4/	- 2	364
Tobacco	-10	222

1/ 1944 preliminary.
2/ Production measured in 1935-39 average dollars.
3/ The unit of production is 100 "1935-39 average dollars."
4/ "Product added" above estimated feed and pasture consumed.

The large increase in livestock production during wartime resulted in the main from an expansion in the size of livestock enterprises already in existence. A few more brood sows were added, or the size of the poultry flock was increased, etc. In addition, greater production per animal unit contributed to the increased output of livestock and livestock products. The time required for feeding and many other tasks incident to this additional livestock production did not increase in the same proportion as did total livestock production. Barns or poultry houses have to be cleaned regardless of the size of the livestock enterprise—a few more head of livestock or a few more chickens do not add greatly to the time required for the job. Hauling of an extra quantity of feed does not add materially to labor requirements as the team has to be harnessed and hitched to the wagon anyway. Taken together, such items account for substantial "savings" in the amount of livestock labor required under conditions of expanding production.

Although the wartime farm-production increase did not involve a proportional increase in man-hour requirements because of these various factors, the size of the farm-labor job did increase decidedly. Not only were farmers faced with more work to be done, but they had fewer workers of lower quality to do the job. To get the wartime farm labor done was not easy.

HOW FARM WORKERS DID THE WARTIME PRODUCTION JOB

Paradoxical as it seems, marked increases in farm production took place despite large decreases in number of farm workers. Like so many jobs on the American industrial war front, "it couldn't be done"—but it was done. The fact that it was done is a tribute to American farmers and farm workers, and to those public officials who were responsible for recruiting, routing, and placing workers in the gaps where they were needed most.

High lights of wartime farm production, labor requirements, and farm employment are given in table 13. Man-hour requirements for all crop production totaled about the same in wartime as in the prewar year 1939, but livestock requirements rose considerably above their prewar level. Total farm employment in 1943 and 1944 averaged about 5 percent less than in 1939. Employment of hired farm workers declined much more than did employment of farm operators and unpaid family workers, however. Even so, a production job was accomplished in 1944 that was 18 percent greater than the job of 1939.

But this is not the full story of the wartime depletion of the farm working force. Several million able-bodied men and experienced workers went into the armed forces, war industries and other industries. These workers were largely replaced by women, children, and older, less physically capable men. The proportion of women in the farm working force, for example, almost doubled during wartime. Thus, at the same time that total farm employment declined by more than 5 percent, the average "quality," that is, man-equivalent rating, of the farm working force decreased by about 5 to 10 percent. When both numbers and quality are considered, the total wartime farm working force was probably around 90 percent of that of 1939.

Table 13.- Index numbers of volume of gross farm production, man-hour requirements and farm employment, United States, 1939 and 1942-44
(1939=100)

Item	1939	1942	1943	1944 1/
Gross farm production	100.0	116.1	113.5	117.9
Livestock production	100.0	114.8	122.2	120.2
Crop and pasture production	100.0	116.6	110.2	117.0
Man-hour requirements—all farm work	100.0	103.3	103.5	103.6
Livestock man-hour requirements	100.0	107.7	109.8	108.0
Crop man-hour requirements	100.0	100.8	99.4	100.5
Farm employment—total 2/	100.0	96.8	95.6	93.5
Family workers	100.0	96.4	96.5	95.9
Hired workers	100.0	98.0	92.7	85.8

1/ Preliminary.
2/ In 1939, average monthly farm employment was 10.7 millions; of these about three-fourths or 8.1 millions were farm operators and unpaid family workers.

More work to be done with fewer and less capable workers meant greater effort and more work per worker. This is primarily how wartime farm labor needs were met. The most important factors contributing to this end were as follows:

1. More days of work per week and per year together with an increase in the average length of work day of regular farm workers.

2. Fuller utilization of seasonal farm workers.

3. Decrease in number of underemployed and ineffectively employed farm workers.

4. Slighting and elimination of some farm tasks.

The data in table 14 give some clue regarding the wartime increase in the length of the farm work week. The average in all seasons lengthened decidedly from 1941 through 1943. But some decrease occurred in the latter half of 1944 as greater dependence was placed upon less physically capable farm workers.

Table 14.- Average length of work week in agricultural employment by months, United States, 1941-44 1/

Month	Average hours worked per week				Index, 1942 = 100			
	1941	1942	1943	1944	1941	1942	1943	1944
	Number	Number	Number	Number				
January		45.1	52.7	47.4		100	117	105
February		49.9	53.1	50.2		100	106	101
March		52.5	54.8	53.8		100	104	102
April		56.7	60.2	55.0		100	106	97
May		58.4	61.5	60.5		100	105	104
June	55.4	57.2	63.2	61.4	97	100	110	107
July	52.9	61.8	63.1	58.5	86	100	102	95
August	53.9	57.8	61.6	56.7	93	100	107	98
September	54.0	59.4	61.0	56.0	91	100	103	94
October	54.1	59.5	60.3	55.4	91	100	101	93
November	52.6	56.6	56.9	54.2	93	100	101	96
December	49.9	51.1	53.3	48.4	98	100	104	95

1/ Source of data: "The Labor Force Bulletin," Bureau of the Census, United States, Department of Commerce, July 1945.

Farm operators have traditionally worked long days but, even so, their work days were lengthened in all regions and in all seasons during the war (table 15). This was brought about to some extent by the marked expansion in livestock production, which required more hours of labor throughout the year. The length of prewar work day of farm operators varied somewhat among divisions, and wartime increases were not entirely uniform.

Hired farm workers also have put in somewhat longer work days during wartime than in prewar years but the percentage increase was not nearly so great as in the case of farm operators. The longer work days of hired men have been confined mostly to the spring and summer months.

Although total man hour requirements of crop production were increased little during wartime, a large amount of hand labor on crops continued to be required. Harvest operations for such crops as vegetables and truck crops, fruits, sugar crops, and cotton continued to need large numbers of seasonal farm workers. In prewar years such seasonal workers were generally available in excess of need. In those years competition among workers for available jobs with accompanying low wage rates paid to seasonal hired workers resulted in low worker incomes and much unemployment. The social problem was serious.

But the war changed all this and created another problem—one of more jobs than workers. In many areas that are heavily dependent on seasonal hired workers, as is California, it was necessary to "stabilize" farm wage rates on various seasonal jobs. The armed forces and war industries made

Table 15.- Average length of work day of farm operators for specified months, and years, by geographic divisions, 1939-44 1/

Month	Year	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	United States
		Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours
September	1939	12.0	12.3	12.1	12.3	11.3	11.0	11.4	11.9	11.2	11.7
	1943	12.5	12.9	12.8	13.0	11.9	11.9	11.9	12.9	11.9	12.4
	1944	12.3	12.7	12.4	12.7	11.8	11.4	11.5	12.7	11.7	12.1
December	1939	11.5	11.1	11.0	10.5	10.0	9.8	9.9	10.1	10.0	10.3
	1943	11.8	11.9	11.8	11.6	10.6	10.6	10.8	10.9	10.9	11.1
	1944	11.3	11.6	11.3	11.3	10.5	10.4	10.5	10.5	10.3	10.8
March	1940	11.5	11.0	10.5	10.4	10.3	9.9	10.3	10.1	10.1	10.3
	1943 2/										
	1944	11.5	11.9	11.5	11.4	10.9	10.9	11.1	10.8	10.6	11.2
June	1940	12.0	12.5	12.5	12.6	11.8	11.7	11.8	12.3	11.3	12.1
	1943	12.5	13.0	13.4	13.5	12.3	12.4	12.6	12.6	12.1	12.8
	1944	12.4	13.1	13.5	13.6	12.4	12.4	12.3	13.2	12.0	12.8
		Index numbers (Sept. and Dec. 1939, Mar. and June 1940=100)									
September	1943	104	105	106	106	105	108	104	108	106	106
	1944	102	103	102	103	104	104	101	107	104	103
December	1943	103	107	107	110	106	108	109	108	109	108
	1944	98	104	103	108	105	106	106	104	103	105
March	1944	100	108	110	110	106	110	108	107	105	109
June	1943	104	104	107	107	104	106	107	106	107	106
	1944	103	105	108	108	105	106	104	107	106	106

1/ Source of data: "Farm Labor" reports, Bureau of Agricultural Economics.
For list of States included in each geographic division, see footnote 1, table 1.
2/ Not available.

large inroads on the supply of seasonal farm workers, and wartime transportation difficulties restricted the movements of many migratory workers.

Several steps were taken to fill in the gap in the seasonal labor supply. Farm family members worked harder and longer. Through the Federal and State labor programs, workers from many sources—Boy Scouts, urban youth, businessmen—were recruited to do part-time seasonal farm work.

The decrease in the supply of migratory farm workers, in particular, created serious problems in areas of heavy demand for seasonal workers. The gap was filled chiefly by use of prisoners of war and workers brought in from foreign countries. The number of the imported group approximated 100,000 at the peak of the 1944 season. The imported workers, on the average, were employed at farm work nearly 90 percent of the available time they were in the United States, according to records of the Office of Labor, W.F.A. Studies of migratory worker families in various areas in 1939 and 1940 indicate that in prewar years workers were able to get employment on only about 50 percent of their available work days. 10/ Fuller utilization of a smaller number of workers made it possible to get the critical seasonal farm jobs done without notable crop losses.

Available data indicate that the wartime decrease in number of farm workers and in number of farms was proportionally greater among the least productive farms. In 1939 half the census-enumerated farms in the United States produced slightly over 10 percent of the total value of farm products, while the other half accounted for about 90 percent. In the same year about one-half of the farm workers were used in producing around one-fifth of all farm production . 11/ Thus, many of the farms that went out of production and many of the workers who left farms during wartime had but little effect on the total farm output.

It is believed that the combination of higher wartime labor requirements and fewer farm workers forced the slighting and elimination of some farm tasks. Had more labor been available to the farmers, critical jobs could have been done at the most opportune time, and the wartime levels of farm production might have been even higher.

10/ Backgrounds of the War Farm Labor Problem, Bureau of Agricultural Economics and Farm Security Administration, May 1942, table 17, page 75.

11/ See "Wages of Agricultural Labor in the United States," Bureau of Agricultural Economics, September 1944.

AFTER THE WAR?

A look ahead on farm production can be based in part on a review of the past. Until the World War II period the most pronounced change in the farm-production picture in the United States was the steady shift of production resources from production of horse and mule power to production of livestock, livestock products, and crops for human use. This increase in farm output was sufficient to provide for the needs of an increasing population and the changes in consumer habits. Increase in mechanization of farm operations, which accompanied the replacement of farm horse and mule power by tractors, resulted in a decline in farm employment and an increase in gross production and output per farm worker.

Wartime increases in gross farm production and farm output overshadowed those that occurred during the two decades preceding World War II. The basis for the wartime increase in crop and livestock production rested largely in increased crop production per acre, since the total cropland base remained practically unchanged. A significant part of the increased production per acre was attributable to above-average weather. But of far greater importance was the increased use of fertilizers, soil-improvement practices, and higher yielding varieties and strains of crops.

Record wartime farm production and output were attained with record low farm employment. Higher acre yields and increased mechanization and shifts to less labor-intensive enterprises were the most important factors contributing to the increase in the effectiveness of farm labor. During the war fuller use was made of the farm machinery on hand and of the increased numbers of important labor-saving machines that were manufactured. Farm operators and other farm workers put in long and hard days of work in attaining record gross production and output per worker.

Aside from price influences, postwar trends in gross farm production and farm output will depend upon changes in the various physical factors contributing to the wartime production increase. A continuation into the postwar period of the very favorable wartime weather conditions cannot be assumed with any assurance. But even after allowing for the weather, farm output of products for human use in 1944 was 20-24 percent above the prewar level.

Postwar changes in the factors contributing to this 20-24 percent increase are the ones to be examined in a long-run view of farm-production possibilities. The future course of some of these factors appears certain. A continued shift of resources from production of horse and mule power to output of crops and livestock for sale will continue, and farm output will thereby be increased. Some net increase in the cropland base by the bringing in of new lands through irrigation, drainage, and land clearing is highly probable.

But of even more importance in determining future farm-production levels are the factors affecting crop production per acre. Important wartime gains due to increased use of improved varieties and strains of seed, and soil-improvement practices, are permanent gains. Further improvement in these general directions is certain. Additions to future crop yields through greater use of fertilizers are highly probable, although the amount of increase will depend in large part upon the relation of farm prices to fertilizer costs and upon educational and other farm programs. With adequate market outlets and a relatively high level of farm prices, it undoubtedly would pay farmers as a group to use considerably more fertilizer than the large quantities used during the war.

Continued improvement in livestock production efficiency will contribute to increased postwar farm output. Better breeding and reduced death losses because of improved livestock sanitation seem certain.

Under conditions of full employment and adequate market outlets, and with wartime limitations on production resources removed, farm output for human use during the next decade can be maintained at 1942-44 levels, and assuming favorable weather and good prices continue could be 10 percent higher by the end of the decade.

Further increases in farm mechanization are practically certain, as is a continuation of the long-time downward trend in farm employment. But with further increase in farm-worker efficiency and a larger proportion of able-bodied workers than during wartime in agriculture, farm families will not have to work as long or as hard as they have in wartime.

METHODS USED IN CONSTRUCTING INDEXES OF GROSS FARM PRODUCTION AND FARM OUTPUT

Index numbers of gross farm production were constructed for each of the 9 census geographic divisions and the United States. These indexes measure, for each division and the United States, total crop production, pasture consumed by livestock, and the product added in the conversion of feed and pasture into livestock and livestock products for human use and into farm-produced power. Lack of adequate data prevented the inclusion of several minor farm products. The more important of these are farm forest products and green-house and nursery products. The exclusion of these, however, cannot greatly affect the indexes of gross farm production.

The regional and national farm-output indexes were calculated by subtracting the quantity-price aggregates of farm-produced power of horses and mules from the total quantity-price aggregates of gross farm production. 12/

12/ For each year the production of each product was multiplied by its 1935-39 average farm price. These "constant dollar" data for each product were then summed to obtain quantity-price aggregates for groups of products and for total production.

Methods used in constructing the gross farm-production indexes are described in the following pages. This section is intended largely for persons who are interested in how the index series were developed.

Formula, Weights, and Base Period

In constructing the index numbers of gross farm production Laspeyres' formula, $\frac{\Sigma\ q_1\ p_o}{\Sigma\ q_o\ p_o}$, was used. The q's refer to the quantities of the individual farm products included, with q_1 the quantity in any given year and q_o the average quantity for the 5-year base period, 1935-39. The p_o's refer to the average farm price of the product for the 5-year period, 1935-39. This formula was used to obtain quantity-price aggregates for each of the 9 census geographic divisions, and the United States totals were obtained by summing the division totals. Average prices used for each product included are shown by geographic divisions in table 16.

The 1935-39 average farm prices thus provided the primary basis for weighting and combining the individual products into groups of products and totals. The product-added-by-livestock technique was used in combining crop production and livestock production to avoid double counting of feed crop production and pasture consumed. 13/

The average of the quantity-price aggregates for the 5-year period, 1935-39, was taken as a base period in the calculation of the index numbers. There were two principal reasons for selection of the 1935-39 base period. First, it is the officially accepted base period for some other indexes constructed in the Bureau of Agricultural Economics as well as for a considerable number of other indexes calculated by other agencies. Secondly, the period 1935-39 was the last full 5-year period that was prewar. Although the war in Europe began in the fall of 1939, United States farm production in 1939 was not greatly affected. As a major interest in the analysis of farm production was in wartime changes, the most recent prewar period was desirable as a base from which to measure changes. In the analysis of wartime and prewar production changes, however, it has been desirable in several cases to use 1939 instead of 1935-39 as a prewar basing point because of the effects of droughts on 1935-39 average production.

13/ The product-added technique of combining crop and livestock production is especially preferable in the case of geographic division indexes because of the heavy inshipments of feeder livestock and feed into some divisions. The product added method credits crop production to the division in which the feed was grown and credits livestock "manufacturing" production (product added) to the division in which the shipped-in feed was fed. It also divides the total pounds of livestock production between the division in which the feeder animal was grown and the division in which it was finished.

Table 16.- Average 1935-39 farm prices of farm products included in index of gross farm production, by geographic divisions

Farm product 1/	Unit	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
		Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Food grains										
All wheat	Bushel		.87	.84	.81	.93	.92	.79	.70	.73
Rye	"		.68	.56	.44	.89			.43	
Buckwheat	"		.63			.74				
Rice	"							.74		.61
Feed grains and hay										
All corn	Bushel	.85	.76	.59	.56	.73	.75	.64	.72	.79
Oats	"	.50	.42	.31	.26	.51	.49	.34	.34	.38
Barley	"		.58	.62	.40	.60	.66	.44	.47	.50
All sorghums—grain	"				.50			.54	.55	.66
All tame hay	Ton	11.60	10.10	7.90	6.50	12.45	10.30	8.75	7.60	9.30
Wild hay	"			5.35	4.40		7.50	6.65	6.65	6.40
All sorghums–forage	"				4.30	11.40	7.65	7.75	6.60	
Cotton and cottonseed	Bale				56.55	61.60	60.20	57.55	60.25	61.30
Oil-bearing crops										
Soybeans	Bushel		1.20	.79	.83	1.05	1.50	1.45		
Peanuts	Pound					.03	.03	.03		
Flaxseed	Bushel				1.55			1.63	1.52	1.75
Tobacco	Pound	.32	.12	.12	.18	.20	.18			
Truck crops										
Farm gardens	2/									
Market gardens	2/									
Commercial truck	2/									
Fruits and tree nuts	2/									

- Continued -

Table 16.- Average 1935-39 farm prices of farm products included in index of gross farm production, by geographic divisions

Continued

Farm product 1/	Unit	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
		Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Vegetables (except truck)										
Dry edible beans (cleaned)	Cwt.		3.55	2.80	3.36				3.20	3.90
Dry peas	"								2.40	1.85
Irish potatoes	Bushel	.70	.77	.69	.60	.81	.76	.88	.56	.70
Sweetpotatoes	"		.90	.89	.93	.74	.80	.76		1.16
Sugar crops										
Sugar beets	Ton			5.90	4.90				5.05	5.45
Sugarcane for sugar and seed	"					2.90		3.05		
Sugarcane sirup	Gallon					.45	.46	.41		
Sorghum sirup	"			.815	.755	.597	.518	.543		
Maple sugar	Pound	.29	.26							
Maple sirup	Gallon	1.50	1.50							
Seed crops										
Alfalfa	Bushel			13.10	11.46			8.75	10.52	10.37
Alsike clover	"		10.50	10.52	10.18				10.74	10.19
Lespedeza	Pound			.0411	.0444	.0592	.0480	.0604		
Red clover	Bushel		12.48	9.81	9.79	10.91	11.26		10.30	11.41
Sweet clover	"			3.91	3.12				3.54	
Timothy	"		2.25	1.52	1.28					
Miscellaneous crops										
Cowpeas	Bushel					1.55	1.55	1.50		
Hops	Pound									.196
Pasture used by livestock	2/									

- Continued -

Table 16.- Average 1935-39 farm prices of farm products included in index of gross farm production, by geographic divisions
Continued

Farm product 1/	Unit	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
		Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Meat animals										
Beef cattle	Pound	.0513	.0635	.0687	.0708	.0563	.0514	.0541	.0618	.0638
Veal calves	"	.0814	.0900	.0853	.0775	.0755	.0720	.0655	.0715	.0818
Sheep	"	.0400	.0390	.0337	.0378	.0350	.0311	.0459	.0393	.0376
Lambs	"	.0750	.0833	.0834	.0803	.0815	.0874	.0679	.0744	.0732
Hogs	"	.0858	.0894	.0846	.0797	.0785	.0769	.0712	.0807	.0866
Dairy products										
Butter	Pound	.300	.300	.300	.292	.238	.236	.278	.333	.300
Butterfat	"	.333	.273	.298	.287	.235	.244	.247	.279	.312
Milk										
Wholesale	Pound	.0222	.0196	.0161	.0168	.0250	.0185	.0200	.0153	.0179
Retail	Quart	.114	.109	.095	.088	.109	.093	.100	.099	.106
Consumed on farms	Pound	.0267	.0235	.0169	.0128	.0265	.0189	.0190	.0162	.0191
Poultry products										
Eggs	Dozen	.315	.260	.198	.173	.219	.187	.175	.218	.229
Commercial broilers	Pound	.198	.196	.196	.184	.195	.185	.181	.218	.184
Chickens	"	.185	.185	.153	.129	.168	.140	.124	.138	.163
Turkeys	"	.257	.247	.182	.162	.201	.163	.139	.172	.185
Wool (shorn)	Pound	.150	.292	.255	.227	.302	.270	.250	.229	.235
Mohair	Pound				.233			.468	.416	.400
Horses and mules	2/									

1/ Prices of certain products were omitted in various regions where the products either were not produced or were produced in such small quantities as not to justify inclusion in the index of production.

2/ Methods used in constructing quantity--price aggregates for these products are described elsewhere.

Sources and Kinds of Basic Data

Production data and farm prices of crops and livestock were obtained for the most part from official reports of the Bureau of Agricultural Economics. The production data for both livestock and crops relate to production within a calendar year, and within each geographic division.

Thus data regarding corn or hay production used in constructing the gross-farm-production index for the West North Central division for 1942 relate to corn or hay produced in 1942 in that division. Similarly, the pounds of beef cattle produced in the West North Central division for 1942 relate to the pounds of beef produced in that division in the 1942 calendar year.

Beef production in the division for the calendar year 1942 was the sum of: (a) The live weight of calves raised during the year plus the live weight added as a result of feeding these calves until the end of the year or until slaughtered or shipped out of the geographic division, (b) the live weight added as a result of feeding cattle shipped into the division, and (c) the live weight added to the inventory weight of cattle on hand at the first of the year in the division. Beef production was thus "net" for the calendar year and "net" within the division.

In combining livestock and crop production, it was necessary to calculate product added by livestock. To do this an estimate was made of feed and pasture consumed by livestock. Quantity-price aggregates for farm-produced power were also derived.

Official reports of the Bureau of Agricultural Economics do not have complete production series for each product included in the gross farm-production index in the various geographic divisions. Official production data prior to 1924, particularly, are not available for several products. In these cases approximations for the missing years were made which were based upon census data, data contained in the WPA National Research Project report "Trends in Size and Production of the Aggregate Farm Enterprise, 1909-36," and in some instances upon the judgment of persons who are acquainted with the production history of the particular product.

Some of the quantity-price aggregate data utilized in constructing the gross-farm-production index were "derived" in the sense that they did not represent a straight forward multiplication of quantity times average price for each geographic division.

Descriptions of the methods used in the development of all these data follow.

Derived Data.- Product added by livestock was derived by subtracting the estimated value, at 1935-39 average prices, of feed and pasture consumed by each class of livestock from the total value, at 1935-39 average prices, of livestock and livestock products.

Data from farm-management enterprise studies and unpublished estimates of feed consumption of different classes of livestock were examined. After careful study of these data the factors shown in table 17 were decided upon in arriving at approximations of feed and pasture consumption. The factors are in terms of the proportion of total value of livestock production at 1935-39 average prices represented by feed and pasture consumed. Pasture factors, in turn, are in terms of the proportion of total feed consumed estimated to be pasture. In the case of dairy products, feed and pasture factors were proportioned to pounds of milk production instead of total value of dairy products.

The same feed factors were used each year for all classes of livestock except horses and mules. Although there may have been trends in the efficiency of livestock-feed-use, particularly in the case of poultry, lack of pertinent data on the subject necessitated the use of constant factors. The authors believe, however, that the gross-farm-production indexes would have differed little from those shown if changes in feeding efficiencies had been allowed for.

Estimates of feed and pasture consumed by horses and mules were derived in the way described later.

Farm-produced power of horses and mules was based upon estimates of feed and pasture consumed per head in 1942 and upon unpublished estimates made for 1934 of total costs of maintaining horses and mules. Data on quantity of feed and pasture consumed per head in 1942 14/ were multiplied by average 1935-39 prices per unit in each geographic division. 15/ The feed value per head thus obtained was expanded in each division on the basis of the proportion that total feed and pasture costs were of total costs. The per head values for 1942 thus obtained were then multiplied by the number of horses and mules of all ages reported on farms in 1942. To this quantity-price aggregate was added an estimate of the annual appreciation in value at average 1935-39 prices (in addition to value estimated by use of the feed-cost data) of horses and mules under 2 years of age. In making the latter estimate, available data on the increase in value of young animals were examined and an approximation was made of the amount that should be added per head of horses and mules under 2 years of age.

Estimates of farm-produced power in other years were made in a similar fashion utilizing data on numbers of animals on farms and estimated "production" per head. In most divisions, however, a trend in the proportion of feed coming from pasture and from concentrates and hay was assumed,

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14/ See "Work Performed and Feed Utilized by Horses and Mules," Bureau of Agricultural Economics, June 1944.

15/ In arriving at the 1935-39 average price of pasture, it was assumed that a feed unit (equivalent in feeding value to that of one pound of corn) of pasture was worth one-half as much as a feed unit of hay.

Table 17.- Factors used in estimating feed consumed by livestock

Item	New England		Middle Atlantic		East North Central		West North Central		South Atlantic	
	Total feed	Pasture	Total feed	Pasture	Total feed	Pasture	Total feed	Pasture	Total feed	Pasture
	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Beef cattle	41	20	50	20	60	20	65	22	60	30
Sheep, lambs and wool	67	33	69	33	70	33	70	40	70	60
Egg production	50		50		45		45		45	
Chickens raised	55		55		50		50		50	
Broilers	65		65		60		60		60	
Turkeys	50	4	50	4	45	4	45	4	45	4
Hogs	70	4	75	4	75	4	75	4	75	4
Mohair							70	100		
Dairy cows and veal calves	1/$0.01286	15	1/$0.01125	20	1/$0.00849	25	1/$0.00663	25	1/$0.01339	25
Horses and mules	2/$75.00	2/$5.00	2/$65.00	2/$5.00	2/$45.00	2/$6.00	2/$37.00	2/$6.00	2/$67.00	2/$8.00

- Continued -

Table 17.- Factors used in estimating feed consumed by livestock - Continued

Item	East South Central		West South Central		Mountain		Pacific	
	Total feed	Pasture	Total feed	Pasture	Total feed	Pasture	Total feed	Pasture
	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed	Proportion of gross livestock value	Proportion of total feed
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Beef cattle	60	30	60	55	60	50	60	50
Sheep, lambs and wool	70	60	70	70	70	65	70	65
Egg production	45		45		45		45	
Chickens raised	50		50		50		50	
Broilers	60		60		60		60	
Turkeys	45	4	45	4	45	4	45	4
Hogs	75	4	75	4	75	4	75	4
Mohair			70	100	70	100	70	100
Dairy cows and veal calves	1/$0.00995	25	1/$0.01136	25	1/$0.00919	25	1/$0.01019	25
Horses and mules	2/$57.00	2/$8.00	2/$37.00	2/$8.00	2/$30.00	2/$10.00	2/$35.00	2/$10.00

1/ Rate per pound of milk produced. The rate per $1 of value of dairy products and veal calves at 1935-39 prices for 1942 was .55 in the 3 Southern geographic divisions and .50 in all other divisions.

2/ Total value (at 1935-39 prices) per head of all ages for 1942.

based upon estimated changes in feed consumed per head contained in the WPA National Research Project report, "Tractors, Trucks and Automobiles." As tractors have increased in numbers since 1919, not only have the numbers of horses and mules declined, but the average annual amount of work per animal has decreased. The latter fact is reflected in a decrease in the quantity of concentrates fed per head and an increase in the pasture consumed per head. This fact was allowed for in making the estimates of feed consumed and "production" per head each year.

The computed farm-produced power production is thus equal to the estimated cost (including net depreciation) at 1935-39 average prices of maintaining horses and mules each year plus the annual appreciation in value of horses and mules under 2 years of age. Product added by horses and mules in the conversion of feed and pasture into power is calculated by subtracting feed and pasture value at 1935-39 average prices from farm-produced power value. Only the product added portion of farm-produced power was used in combining all crop and livestock production in the construction of the indexes of gross farm production. Farm-produced power—product added and feed and pasture consumed—was excluded in the measure of farm output.

Methods used in estimating pasture used by livestock were described in the sections on "product added by livestock" and "farm-produced power." Estimates of pasture consumption thus obtained for horses and mules and other livestock were combined to obtain an estimate of pasture used by all livestock.

"Truck crops" production as used in this report is made up of four components—farm gardens, market gardens, commercial truck crops for fresh market, and commercial truck crops for processing. Basic data utilized in the estimation of truck-crops production were obtained from the series of estimates in "Income Parity for Agriculture, Part I—Farm Income, Section 14—Income From Truck Crops and Farm Gardens," U.S.D.A., February 1941 (mimeographed).

This Income Parity report contained estimates of the value of farm gardens in current year dollars, by States and by years. The United States total value of farm gardens was "deflated" by the use of the index of prices paid by farmers (including interest and taxes), with 1935-39=100. The deflated data regarding farm gardens approximate production in terms of average 1935-39 prices. The "prices paid" index was used as a deflator because it seemed to best approximate farmers' year-to-year changes in price evaluation of farm gardens. The deflated United States farm-garden figure for each year was distributed among geographic divisions in proportion to the current year dollars evaluation of farm gardens estimated in the Income Parity report.

The Income Parity report also contains estimates by years, in current year dollars, of production of commercial truck crops for fresh market, commercial truck crops for processing, and market gardens. The data regarding value of commercial fresh-market and processing truck crops are taken from the official BAE reports on commercial truck-crop production. The data on value of market gardens are estimates that include market gardens as such and the commercial truck crops not included in the official BAE reports.

As a first step in the derivation of quantity-price aggregates for truck crops other than farm gardens, the United States production reported each year by BAE for each commercial fresh-market and processing truck crop was multiplied by its average 1935-39 United States farm price. This quantity-price aggregate was expanded each year by use of the ratio of the current year dollar value of commercial truck crops for fresh market and processing and market gardens, to the current year dollar value of commercial truck crops for fresh market and processing. The United States quantity-price aggregate for all truck crops (except farm gardens) thus obtained was distributed among geographic divisions each year in proportion to the current year dollar value of truck crops in each division estimated in the Income Parity report.

Fruit and tree nuts production for the period 1924-43 was derived from State quantity-price aggregates for fruits and tree nuts which had been prepared in the Bureau of Agricultural Economics for another purpose. State average 1935-39 farm prices were used in the calculation of the State aggregates. These aggregates were combined into totals for geographic divisions for the period starting with 1924. The quantity-price aggregate series was "filled in" for the period 1919-23, on the basis of fruit and nut production data available by geographic divisions for that period. Preliminary data for 1944 were derived in a similar manner.

Gaps in Production Data.- Official BAE production data were not available for several products in the early part of the period covered by the study.

Data from the Census of Agriculture were used in approximating production of dry field peas and turkeys for the period 1919-28.

Estimates contained in the WPA National Research Project Report, "Trends in Size and Production of the Aggregate Farm Enterprise, 1909-36," were used in approximating production of several products. These included soybeans for beans and cowpeas for peas for the period 1919-23, grain sorghums for the period 1919-28, and milk production for the period 1919-23.

Approximations of lespedeza seed production for the period 1919-23, were based upon data contained in "Weather, Crops and Markets, Vol. 1, No. 24."

Approximations of broiler production for the period before 1934 were based upon judgment of persons acquainted with the history of the production of broilers. The broiler industry is known to have been of minor production importance before 1924.

Production of sorghum for forage was approximated for the period 1919-28, by assuming that its production would follow the same trend as the production of all tame hay.

For several products official production data for the United States total were available for the entire period since 1919, but geographic division data were not available for the early part of the period. Production of sweetclover seed was distributed among geographic divisions for the period 1919-23, in the same proportion as sweetclover seed production was distributed in 1924. Production of eggs and chickens was distributed among geographic divisions from 1919 to 1923 upon the basis of trends indicated by persons acquainted with the history of poultry production of the period.

Production data on sheep and lambs were not available separately for the period 1919-23; the same situation existed for cattle and calf production. For the period 1919-23, quantity-price aggregates for these meat animals were developed by using composite sheep-lamb and cattle-calf 1935-39 average prices.

The numbers of horses and mules under 2 years of age were not known for 1919. Approximations were based on colt crops of previous years.

GROSS-FARM-PRODUCTION, FARM-OUTPUT, AND PRODUCTION-FOR-SALE-AND-CONSUMPTION INDEXES COMPARED

The two new indexes that have been used in this report supplement in two important respects the Bureau of Agricultural Economics index of volume of agricultural production for sale and home consumption which has been published since 1928.

(1) The gross-farm-production index includes farm-produced power of horses and mules as an item of farm production, whereas the production-for-sale-and-consumption index does not.

(2) The production-for-sale-and-consumption index is available for the United States only, but the farm-output and gross-farm-production indexes have been constructed for each of the 9 census geographic divisions as well as for the United States, thus making possible an analysis of important geographical changes in farm production.

All three of these index series are needed in order to analyze farm-production changes adequately. The index of production for sale and consumption gives the best measure of the current-year volume of farm products which enter the marketing system and thus contribute to gross cash or realized farm income. (As used here, the term "marketing system" includes human consumption on the farm where grown.)

The farm-output index gives the best measure of current-year production of commodities for consumption, although some of the output may be sold and consumed in succeeding years.

The gross-farm-production index is the best of the three indexes to measure the total contribution of farm labor and farm land because it includes farm-produced power. It is recognized that farm-produced power is a "producer's good" because from the standpoint of agriculture as a whole it is not produced for human use, but for use in other farm production. 16/

Wheat production, for example, measures in part the farm-produced power which was one of the input factors in the process of wheat production. From some viewpoints, therefore, inclusion of farm-produced power in a measure of farm production results in some duplication. 17/ But for several purposes the total contribution of farm land and farm labor over the last quarter-century can be measured more adequately if credit is given for power units produced on the farm. Because horses and mules have been important users of farm land and labor resources and because there has been a sharp downward trend in their numbers, their exclusion from measures of farm production obscures more than clarifies our actual history of farm production. This is particularly true when any attempt is made to measure changes in the efficiency of farm workers.

Although horse and mule power is the most important farm-furnished producer's good, other producer's goods have been produced on farms to a decreasing extent over time. Examples are fence posts, lumber, and fuel. These and similar items should logically be included in a complete measure of gross farm production, but lack of data prevented their inclusion.

The long-time trends of the farm-output and production-for-sale-and farm-home consumption indexes are practically identical. From a long-time view both indexes measure changes in the same thing—production of farm products for human use. But there are marked yearly differences in the two indexes because they measure somewhat different quantities within a calendar year and have different methods of computation. These differences in quantities measured and in methods of computation, in turn, are due to the different uses for which the two indexes are intended and the fact that the farm-output index was constructed for each geographic division as well as for the United States total.

A clear understanding of the major differences in methods of computation is necessary for proper interpretation of the meaning of the two index series. The chief difference in method is that by which livestock production and crop production are combined into total production for each calendar year.

16/ To a very limited extent, but to a greater degree 25 years ago than now, horses and mules have been sold from farms, thus taking them out of the "producer's good" category from the standpoint of agriculture.

17/ Production of seed, which is also a producer's good, has been included in the measure of gross farm production. Because of the detailed calculations that would have been necessary, it was not excluded along with farm-produced power in the construction of the index of farm output. Exclusion of seed production would affect the farm-output index only slightly.

The index of production for sale and consumption includes current calendar year's production of crops for sale 18/ and farm-home consumption and current year's quantities of livestock and livestock products sold or used for farm-home consumption. Crop production used for seed and feed on the farm where grown are excluded and total value, at 1935-39 average prices, of livestock and livestock products sales and consumption are used. The livestock sales and consumption quantity-price aggregate used for each calendar year thus includes the total quantity of feed and pasture consumed by livestock in the given year plus the product added by livestock above the feed and pasture consumed. The crop quantity-price aggregate for each calendar year, on the other hand, includes only production of crops for sale and consumption in the farm home and thus excludes farm-produced feed.

The farm-output index for each calendar year is calculated from all crop production, pasture consumed by livestock, and the product added by livestock other than farm horses and mules in the calendar year. From the total quantity-price aggregate thus obtained is subtracted the estimated quantity of feed and pasture consumed by farm horses and mules in the calendar year. But no adjustment is made for crop production used for seed.

The more important differences in the methods of computation of the two indexes can be enumerated as follows.

(1) The farm-output index credits farm-produced feed in the calendar year in which it was produced. The sale-and-consumption index credits this feed indirectly in the form of livestock production in the year fed, which is usually a year after it is produced.

(2) The livestock sales-and-consumption data used in the sales-and-consumption index have not been corrected for inventory changes in livestock. The data regarding livestock production used in the farm-output index are "net" for the calendar year.

(3) Through the use of crop-sales data in the sales-and-consumption index, some feed-crop production is counted twice—once when sold from one farmer to another, and again when "sold" through livestock. Similarly, some feeder livestock are counted twice—once when sold as feeders and again when sold as finished livestock.

There are several other differences in methods of computation. Feed imports into the United States, as well as all commercial feeds, are credited to livestock production in the sale-and-consumption index. An adjustment has been made for all feed and pasture consumed in calculating product added in the farm-output index. No adjustment has been made for crop production used for seed in the farm-output index. The sale-and-consumption index includes only that portion of seed which enters commercial channels. No adjustment has been made for variation in the efficiency of feed use by livestock in the farm-output index. This variation in efficiency is reflected automatically in the sale-and-consumption

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18/ Sales of crops include feed crops sold by one farmer and bought by another.

index through the use of actual data regarding livestock and feed-crop sales. Both indexes use average 1935-39 farm prices in weighting and both use the 1935-39 base period. But in the farm-output index, the prices used as weights are averages for geographic divisions whereas the sale-and-consumption index uses national averages. In the farm-output index, commodities unimportant in a particular geographic division are omitted when dealing with that division. There are minor differences in the manner in which production data for some commodities were approximated in the earlier years.

As in the computation of the two index series essentially the same basic production data were used, it is possible to examine the relative importance of some of the above differences in methods of computation.

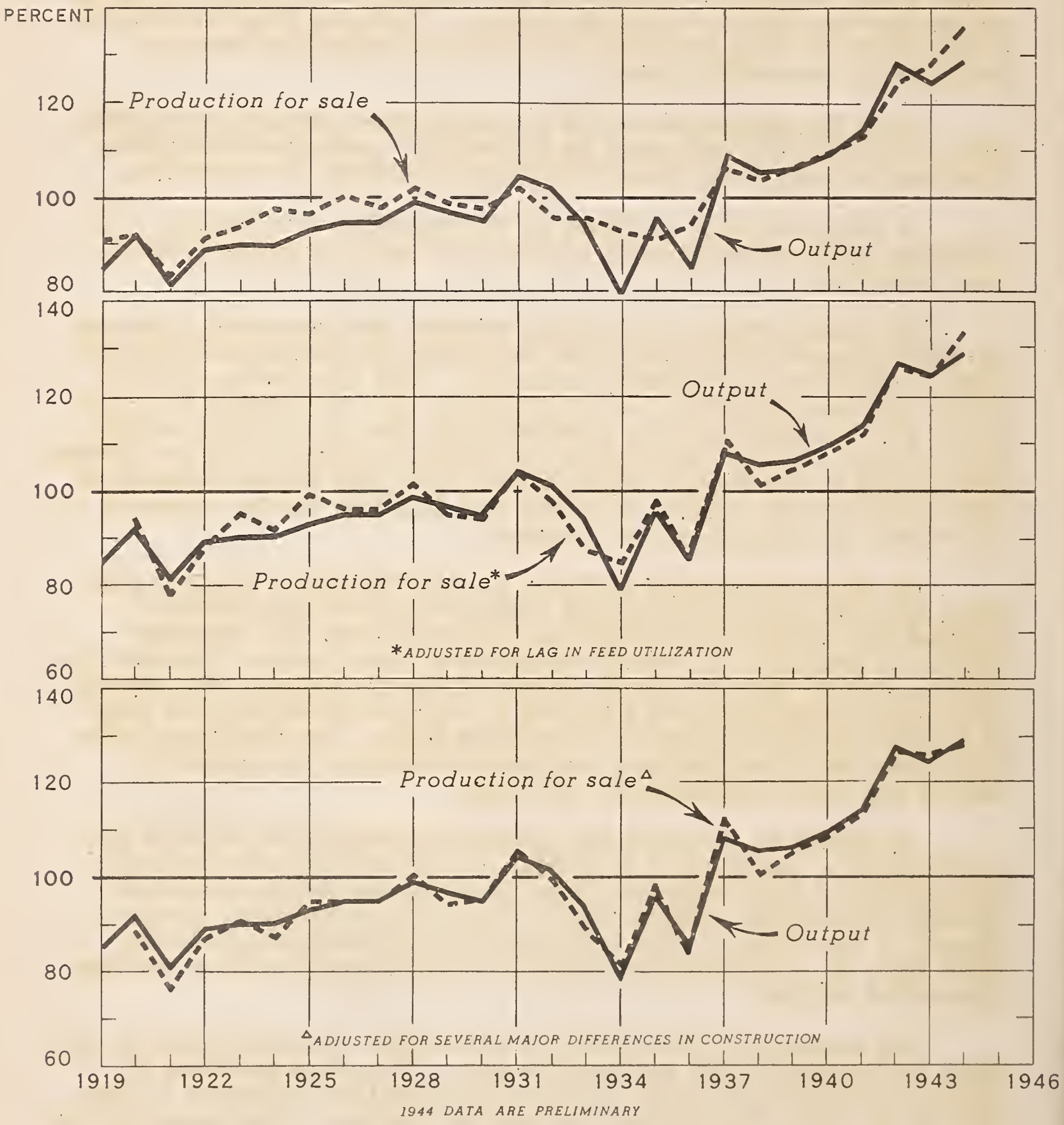
In the top section of figure 18 the two series are compared. The long-time trends are practically the same but there are marked year-to-year variations.

The middle section of the chart compares the farm-output index and the sale-and-consumption index after the latter has been adjusted for the "lag" in crediting of feed-grain production. This adjustment, which in effect credited feed grains fed (to livestock other than horses and mules) to the year in which they were produced rather than to the year in which they were fed, reduces considerably the yearly variation in the two indexes, particularly in the drought years 1934 and 1936. The lag in crediting of feed production thus appears to be the most important single difference in the methods of computing the two indexes.

In the bottom section of figure 18, the farm-output index is compared with the sale-and-consumption index after the latter has been adjusted for (a) the lag in crediting feed grains fed, (b) inventory changes in livestock, (c) "double counting" of some crop and livestock production, and (d) imports into the United States of important feed grains. After these adjustments have been made in the sale-and-consumption index it differs very little from the farm-output index. The slight variations that remain are attributable to the other differences in computation methods for which no adjustments were made.

The manner in which the two indexes supplement each other can now be summarized. The index of production for sale and home use gives the best measure of farm production going for human use or into commercial channels in any given calendar year. Also, since it measures changes in the sum of the volume of farm marketings and home consumption for any given year, it is particularly useful in connection with cash or realized farm-income studies.

The farm-output index gives the best measure of farm production for human use produced within any calendar year. It is more sensitive to droughts and other variations in production conditions from year to year than is the index of production for sale and home use. The farm-output index has been constructed for each geographic division as well as for the United States, whereas the sale-and-consumption index is available for the United States only. The latter is one of the most important contributions



INDEX NUMBERS OF FARM OUTPUT COMPARED TO PRODUCTION FOR SALE AND FARM HOME CONSUMPTION, UNITED STATES, 1919-44

(1935-39=100)

*ADJUSTED FOR LAG IN FEED UTILIZATION

△ADJUSTED FOR SEVERAL MAJOR DIFFERENCES IN CONSTRUCTION

1944 DATA ARE PRELIMINARY

U. S. DEPARTMENT OF AGRICULTURE NEG. 45630 BUREAU OF AGRICULTURAL ECONOMICS

Figure 18.- Differences in the farm-output and production-for-sale-and consumption indexes occur primarily because of differences in the year in which credit is given to feed-crop production.

of the new farm-output index. It is also the best index for measuring the general or continuing level of production—that is, if farmers sell or use more or less in any year than they produce, either inventories are built up or capital resources are depleted.

GROSS-FARM-PRODUCTION, FARM-OUTPUT, AND W.P.A. NATIONAL RESEARCH PROJECT INDEXES COMPARED

Indexes of agricultural production and output per worker for the United States as a whole and for 11 farming areas were constructed by the National Research Project of the Works Projects Administration for the period 1909-36. 19/ These indexes were extended through 1942 by the Bureau of Labor Statistics, U. S. Department of Labor. 20/

The National Research Project index of agricultural production differs from the gross-farm-production and farm-output indexes. The differences are due primarily to the system of weighting used and the manner in which farm-produced power of horses and mules was handled in the National Research Project index. Man-hour requirements per unit of production in the base period were used as weights. In the case of livestock production, only direct labor requirements were used in calculating the weights. Duplication of feed-crop production was thus avoided since the direct man-hour requirements for livestock production do not include labor used in raising feed for the livestock.

Total crop production was included in the National Research Project index, but labor requirements for raising and maintaining farm horses and mules were not included in the total production aggregates. Thus the feed (exclusive of pasture) consumed by horses and mules was included but the product added by horses and mules was excluded. Aside from differences due to kinds of weights used, the National Research Project index thus measures a volume of total production that is greater than that measured by the farm-output index, and less than that measured by the gross-farm-production index.

These differences in the production indexes are reflected in the indexes of production and output per worker calculated from the three series. When 1935-39 is taken as 100 for all three series, output per worker calculated from the National Research Project index shows a level generally between that of farm output per worker and gross farm production per worker from 1919 to the base period. From the base period to 1942 the National Research Project index is generally below both the gross farm production per worker and farm output per worker indexes.

19/ "Trends in Size and Production of the Aggregate Farm Enterprise, 1909-36," by R. G. Bressler, Jr., and J. A. Hopkins, Report No. A-6 (1938) and "Trends in Employment in Agriculture, 1909-36," by E. E. Shaw and J. A. Hopkins, Report No. A-8 (1938).

20/ "Productivity in Agriculture: 1909-42."

CROP PRODUCTION PER ACRE AND CROP YIELD INDEXES COMPARED

The index of crop production per acre used in this report is different from the crop-yield index of 28 crops published by the Bureau of Agricultural Economics. The latter index is computed from yields of 18 field crops per acre harvested and yields of 10 fruits per acre of bearing age, combined in proportion to the relative values of the crops during the 1923-32 period. Whereas the yield index of 28 crops is computed on a basis of harvested acreage, the crop-production-per-acre index is computed on a total cropland (harvested acreage, plus failure and summer fallow acreage) basis. The crop-yield index uses constant-value weights for each of the 28 crops throughout the period covered by the index. In contrast, the crop-production-per-acre index gives a variable weight to individual crops in each year according to the relative production importance (as measured in average 1935-39 prices) of the crops in the particular year.

Because of these major differences in construction, the two index series are not strictly comparable and have somewhat different trends. When 1935-39 is taken as 100 for both indexes, the crop-production-per acre index shows a somewhat higher level than the crop-yield index from 1919 to 1935. This difference is mainly explained by the fact that larger than average acreage of crop failure occurred during the 1935-39 period. The lower "base yield" of the crop production per acre index thus tends to raise the level of the index above that of the crop-yield index during the period preceding 1935.

It would logically follow that the crop-production-per-acre index would also have a higher level than the crop-yield index in the years following 1935-39. But actually the latter index has a slightly higher average level. This is caused largely by differences in the relative weight given to individual crops in the two indexes. Cotton, for example, has a heavier weight in the crop-yield index in the years following the 1935-39 period. In general, the lower level of the crop-production-per-acre index in the war years would reflect a relatively heavier weighting of lower "value" per acre crops than in the crop-yield index during the same period.

APPENDIX

The following tables present index numbers which were used in preparing several of the charts shown in this report. In addition, the tables present index numbers of production by groups of products for each geographic division.

Table 18.- Index numbers of gross farm production, farm output and production by groups of products, United States, 1919-45
(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by: All livestock	Product added by: Meat animals and animal products	Crops and pasture: Total crops and pasture 1/	Feed grains hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	96	85	173	97	83	95	106	127	50	85	72	85	87	96	32
1920	101	92	168	94	80	104	116	112	58	97	83	102	102	101	39
1921	91	81	163	96	84	89	108	107	52	87	54	97	61	67	34
1922	97	89	158	99	89	96	107	114	62	106	89	75	74	83	34
1923	98	90	154	101	91	96	110	99	63	95	89	76	77	102	46
1924	97	90	149	100	91	96	100	110	69	95	83	73	103	83	74
1925	99	93	144	99	91	99	107	83	77	81	76	73	122	92	60
1926	101	95	139	100	93	101	101	107	75	88	101	69	136	87	53
1927	100	95	134	101	95	99	107	113	77	98	77	70	98	83	70
1928	102	99	129	100	96	103	108	116	78	108	92	68	110	93	61
1929	101	97	124	101	97	100	103	106	86	92	86	72	113	103	60
1930	98	95	120	102	99	96	94	115	86	94	84	83	106	112	66
1931	105	104	116	103	101	106	103	122	86	104	106	78	130	105	64
1932	102	101	112	103	101	102	113	98	86	104	86	91	98	68	59
1933	95	93	109	104	103	92	96	72	89	97	87	102	99	94	47
1934	82	79	107	98	97	76	72	69	86	111	82	84	73	74	58
1935	97	96	105	95	94	97	103	84	94	107	104	90	81	90	98
1936	87	85	103	100	99	83	77	83	93	90	81	95	94	80	74
1937	107	108	100	99	98	110	106	115	97	106	108	96	144	107	86
1938	104	105	97	101	101	105	108	120	106	101	97	114	91	94	102
1939	105	106	95	105	108	105	106	98	110	96	110	105	90	129	140
1940	107	109	93	107	109	108	111	107	108	102	103	103	96	99	164
1941	111	114	90	112	116	111	116	121	110	103	118	98	81	85	181
1942	122	127	87	121	127	122	129	127	114	108	112	111	97	96	288
1943	119	124	85	129	137	116	122	109	109	132	98	81	87	96	306
1944 2/	124	129	82	127	135	123	126	139	122	110	113	82	94	126	262
1945 3/	123	128	79	127	136	121	125	144	127	113	105	96	70	132	280

1/ Includes some miscellaneous crops not included in separate crop groups shown.
2/ Preliminary.
3/ Preliminary estimate based largely on December, 1945 report of Crop Reporting Board.

Table 19.- Index numbers of gross farm production, farm output and production by groups of products, New England Division, 1919-44 1/
(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by: All livestock	Product added by: Meat animals and animal products	Crops and pasture: Total crops and pasture	Feed grains hay and pasture	Food grains 2/	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	102	91	210	96	85	105	123	—	54	70	138	160	—	208	—
1920	96	85	204	94	83	97	111	—	55	67	111	150	—	198	—
1921	97	87	199	94	84	98	102	—	61	93	81	120	—	212	—
1922	93	84	192	96	86	92	114	—	50	65	96	150	—	144	—
1923	98	90	186	95	86	100	109	—	58	82	113	125	—	199	—
1924	99	91	180	94	86	102	103	—	61	98	114	150	—	192	—
1925	96	89	174	92	85	99	105	—	70	76	118	115	—	189	—
1926	95	88	164	91	84	97	101	—	70	87	125	115	—	146	—
1927	93	87	154	89	83	95	102	—	67	85	96	150	—	140	—
1928	92	87	147	88	82	95	102	—	66	91	91	110	—	145	—
1929	96	92	137	88	84	102	102	—	69	110	107	105	—	146	—
1930	99	96	131	91	87	104	100	—	64	107	135	135	—	164	—
1931	99	96	125	92	89	103	103	—	80	114	94	65	—	151	—
1932	96	93	120	94	91	97	95	—	63	99	139	100	—	135	—
1933	98	96	116	95	93	100	93	—	96	103	142	60	—	93	—
1934	97	96	111	93	91	100	94	—	91	135	63	95	—	74	—
1935	97	96	108	95	93	99	103	—	97	94	98	139	—	83	—
1936	98	98	104	98	98	98	95	—	101	109	78	79	—	100	—
1937	104	104	100	101	101	105	101	—	95	112	126	84	—	109	—
1938	98	98	97	102	102	96	100	—	99	94	82	124	—	83	—
1939	103	104	91	104	106	102	101	—	108	91	116	74	—	125	—
1940	101	103	86	105	107	98	99	—	88	105	88	95	—	113	—
1941	102	104	84	107	109	99	92	—	98	105	106	70	—	118	—
1942	109	112	80	115	118	106	107	—	93	105	126	115	—	103	—
1943	118	122	79	121	125	116	103	—	87	169	95	95	—	102	—
1944 3/	111	114	77	124	129	102	91	—	97	130	80	85	—	117	—

1/ See footnote 1, table 1.
2/ Omitted because of its little importance.
3/ Preliminary.

Table 20.- Index numbers of gross farm production, farm output and production by groups of products, Middle Atlantic Division, 1919-44 1/

(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by: All livestock	Product added by: Meat animals and animal products	Crops and pasture: Total crops and pasture 2/	Feed grains hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	102	90	189	98	86	104	119	133	53	104	83	182	—	153	—
1920	107	98	183	95	84	115	117	121	63	127	179	162	—	168	—
1921	93	83	175	96	85	92	105	119	56	96	56	95	—	157	—
1922	105	97	169	98	89	109	114	123	60	119	146	169	—	147	—
1923	98	90	164	98	90	98	102	114	61	106	115	149	—	149	—
1924	102	95	156	97	90	105	110	100	76	118	111	162	—	153	—
1925	99	93	147	97	90	101	112	109	73	83	103	128	—	151	—
1926	98	93	140	96	91	100	102	102	70	85	153	176	—	119	—
1927	96	92	132	97	92	96	107	96	76	89	75	135	—	123	—
1928	95	91	125	96	92	94	99	78	74	103	102	108	—	134	—
1929	91	88	119	96	94	88	94	84	78	82	81	81	—	134	—
1930	92	90	113	98	96	89	86	97	77	86	120	162	—	106	—
1931	100	99	110	98	97	101	102	101	79	111	125	88	—	147	—
1932	95	94	108	99	98	93	93	72	73	105	122	95	—	123	—
1933	95	94	106	99	98	93	92	84	93	101	95	88	—	57	—
1934	95	94	104	98	97	93	90	81	90	132	78	95	—	60	45
1935	101	100	104	98	98	102	105	102	92	104	106	128	—	82	45
1936	94	93	102	100	99	91	89	93	98	98	75	95	—	105	45
1937	103	103	101	100	100	105	105	113	94	107	121	95	—	90	91
1938	101	102	98	100	100	102	105	103	104	98	84	81	—	103	137
1939	101	102	95	102	103	100	96	89	112	93	114	101	—	120	182
1940	102	103	93	103	104	101	104	94	101	97	92	93	—	134	273
1941	102	103	91	105	106	100	98	86	107	102	96	73	—	153	273
1942	107	110	87	108	111	107	110	84	108	97	111	113	—	111	682
1943	101	103	84	110	113	95	100	71	99	100	67	93	—	104	636
1944 3/	107	110	81	110	114	104	104	106	115	91	98	100	—	132	455

1/ See footnote 1, table 1.

2/ Includes some miscellaneous crops not included in separate crop groups shown.

3/ Preliminary.

Table 21.- Index numbers of gross farm production, farm output and production by groups of products, East North Central Division, 1919-44 1/

(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by:		Crops and pasture									
				All livestock	Meat animals and animal products	Total crops and pasture 2/	Feed grains hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton 3/	Tobacco	Oil crops
1919	97	86	181	93	80	98	98	160	58	96	59	148	—	234	—
1920	98	88	175	89	77	102	105	102	59	125	119	177	—	229	1
1921	88	78	166	89	79	87	93	95	57	87	39	135	—	183	1
1922	95	87	161	94	85	95	97	109	67	131	105	83	—	171	3
1923	97	90	155	96	89	97	98	121	67	119	101	115	—	186	4
1924	91	85	148	96	89	89	91	95	76	120	75	117	—	160	5
1925	97	92	140	94	89	99	107	79	88	104	73	125	—	183	5
1926	95	90	134	96	91	95	98	103	78	105	117	101	—	135	6
1927	89	84	129	97	93	85	88	84	75	96	59	89	—	100	8
1928	93	89	123	95	92	92	101	45	81	123	87	64	—	143	10
1929	90	87	118	96	93	87	91	78	85	86	73	43	—	176	13
1930	86	82	114	96	94	80	81	85	89	79	64	74	—	187	21
1931	100	99	111	98	96	102	101	126	89	108	138	62	—	199	26
1932	99	98	108	99	98	98	105	80	71	123	81	119	—	136	24
1933	87	85	106	101	101	80	80	81	92	92	82	127	—	89	18
1934	81	78	104	96	95	74	67	89	92	137	72	115	—	75	39
1935	98	97	104	95	94	100	100	99	89	119	122	92	—	78	85
1936	86	84	103	100	100	79	76	94	92	92	64	97	—	74	60
1937	105	106	101	99	99	108	111	111	97	94	129	64	—	110	82
1938	104	104	98	101	101	105	105	104	113	101	63	124	—	111	111
1939	107	109	94	105	106	108	108	92	109	94	122	123	—	127	162
1940	105	107	90	108	110	103	104	98	104	82	91	127	—	128	123
1941	112	116	85	113	117	112	111	102	118	92	115	131	—	107	175
1942	119	124	79	121	127	118	122	62	121	82	106	151	—	104	270
1943	114	119	74	125	132	109	114	54	102	92	67	38	—	96	284
1944 4/	114	120	68	124	131	110	108	91	116	71	106	60	—	107	268

1/ See footnote 1, table 1.
2/ Includes some miscellaneous crops not included in separate crop groups shown.
3/ Omitted because of its little importance.
4/ Preliminary.

Table 22.- Index numbers of gross farm production, farm output and production by groups of products, West North Central Division, 1919-44 1/

(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by:		Crops and pasture									
				All livestock	Meat animals and animal products	Total crops and pasture 2/	Feed grains hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	111	98	192	105	88	114	113	138	77	97	185	66	19	78	46
1920	120	110	185	99	84	130	136	126	88	132	167	98	24	78	73
1921	113	103	181	104	90	118	123	121	77	122	50	85	21	69	55
1922	123	115	177	113	102	127	125	146	84	180	278	72	45	78	73
1923	123	115	171	117	107	126	138	94	84	157	196	69	38	108	116
1924	122	115	166	115	106	125	120	145	92	156	171	89	58	88	217
1925	121	115	159	112	104	125	133	103	108	97	144	100	90	100	159
1926	111	104	154	115	108	109	109	108	99	106	194	100	66	69	133
1927	127	123	149	115	109	132	135	133	92	138	146	103	35	78	175
1928	130	128	144	115	110	137	135	153	98	177	158	112	45	100	132
1929	124	121	139	117	113	127	130	124	107	117	160	115	68	118	112
1930	123	121	135	119	117	124	120	148	104	114	81	129	47	167	152
1931	115	113	129	120	119	113	109	133	95	118	188	108	90	157	90
1932	127	127	123	116	115	132	141	112	98	134	104	109	94	147	86
1933	107	105	118	119	120	101	112	66	103	105	118	126	75	147	61
1934	71	65	114	107	105	55	55	52	43	78	79	72	72	59	49
1935	100	99	111	97	95	102	108	78	106	126	148	87	53	78	133
1936	76	72	105	101	101	65	60	79	71	61	44	85	93	59	45
1937	105	105	101	94	93	110	109	119	104	106	127	99	121	108	66
1938	109	111	94	100	100	113	111	126	109	102	67	129	101	127	81
1939	110	113	89	108	111	110	112	98	110	105	114	100	132	128	175
1940	117	121	87	109	113	120	119	113	115	126	109	120	116	127	260
1941	126	132	85	117	123	130	126	137	121	108	76	107	143	118	277
1942	149	159	82	131	139	157	154	161	134	127	76	118	126	108	443
1943	146	156	80	143	155	147	145	134	122	145	50	73	89	118	517
1944 3/	150	161	76	135	146	157	160	148	118	105	47	76	129	147	375

1/ See footnote 1, table 1.

2/ Includes some miscellaneous crops not included in separate crop groups shown.

3/ Preliminary.

Table 23.- Index numbers of gross farm production, farm output and production by groups of products, South Atlantic Division, 1919-44 1/
(1935-39 = 100)

Year	Gross farm production	Farm output	Product added by: Farm produced power	All livestock	Meat animal and animal products	Total crops and pasture 2/	Crops and pasture: Feed grains hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	92	83	146	96	80	91	102	113	51	105	53	131	157	59	48
1920	97	90	142	94	79	98	104	110	59	109	72	128	159	76	49
1921	78	68	139	94	80	74	100	88	55	95	41	103	93	45	49
1922	83	75	134	95	83	80	100	96	70	115	72	89	84	54	40
1923	86	80	130	94	83	85	96	102	70	98	77	67	97	72	49
1924	84	77	126	93	82	82	86	82	72	101	93	50	107	56	62
1925	87	81	124	92	83	85	82	87	79	80	70	41	129	71	66
1926	94	90	120	93	85	94	88	106	74	94	98	73	151	70	59
1927	90	86	117	96	89	89	93	87	78	114	62	64	109	84	71
1928	89	85	114	94	88	88	82	87	75	120	87	56	106	86	68
1929	93	90	111	94	88	93	87	88	89	109	79	70	119	88	75
1930	91	89	108	93	89	91	71	93	82	97	63	73	138	100	60
1931	97	96	105	93	89	98	94	118	77	108	120	82	129	80	91
1932	79	76	102	95	93	76	84	72	84	101	60	108	91	46	76
1933	91	90	100	95	94	90	92	82	85	98	84	116	103	86	66
1934	87	85	99	93	91	85	88	92	88	117	80	105	93	66	82
1935	97	97	99	94	93	98	101	104	95	110	97	113	97	94	89
1936	90	89	100	98	97	89	86	96	93	82	81	95	102	81	101
1937	106	107	100	100	100	107	103	105	90	106	108	99	35	100	104
1938	98	97	100	102	102	97	107	103	105	105	98	98	76	91	103
1939	109	110	101	106	108	109	103	92	117	97	116	95	90	134	103
1940	106	106	101	108	110	105	107	100	111	98	111	84	110	90	142
1941	97	97	100	114	119	93	104	103	109	84	126	89	65	77	114
1942	108	109	99	124	132	104	107	103	109	103	117	95	93	94	152
1943	107	109	97	135	147	100	109	81	106	110	96	99	87	91	155
1944 3/	117	120	97	137	149	112	107	130	117	91	114	110	95	124	153

1/ See footnote 1, table 1.
2/ Includes some miscellaneous crops not included in separate crop groups shown.
3/ Preliminary.

Table 24.- Index numbers of gross farm production, farm output and production by groups of products, East South Central Division, 1919-44 1/
(1935-39 = 100)

Year	Gross farm production	Farm output	Product added by: Farm produced power	Product added by: All livestock	Product added by: Meat animals and animal products	Crops and pasture: Total crops and pasture 2/	Crops and pasture: Feed grains hay and pasture	Crops and pasture: Food grains	Crops and pasture: Truck crops	Crops and pasture: Vegetables except truck	Crops and pasture: Fruits and tree nuts	Crops and pasture: Sugar crops	Crops and pasture: Cotton	Crops and pasture: Tobacco	Crops and pasture: Oil crops
1919	92	82	138	99	81	91	102	148	64	92	73	146	57	162	74
1920	92	83	135	96	79	91	110	81	76	93	119	151	54	135	79
1921	84	74	131	97	82	81	106	79	69	87	61	150	49	90	68
1922	92	85	129	96	82	91	101	77	85	97	157	112	64	139	50
1923	84	75	126	96	83	81	94	74	83	84	86	89	41	157	40
1924	87	79	124	93	80	86	88	45	91	68	157	55	71	129	60
1925	96	91	120	93	82	97	85	62	102	71	88	64	112	125	50
1926	103	99	119	96	86	105	99	91	104	94	136	78	111	119	42
1927	88	82	117	99	92	85	90	48	104	99	62	70	84	69	59
1928	88	82	113	95	88	86	80	36	94	97	135	67	87	99	56
1929	98	96	110	94	87	100	90	43	102	99	84	75	109	129	62
1930	85	80	108	93	87	83	61	46	101	77	72	66	96	129	50
1931	107	108	105	92	87	111	104	97	103	101	158	119	110	150	76
1932	90	88	101	96	94	89	92	57	106	124	55	127	76	105	72
1933	93	92	100	97	96	92	97	67	105	98	108	131	75	116	56
1934	91	89	99	95	94	89	96	82	89	128	107	150	73	95	88
1935	90	88	99	97	97	88	95	76	95	113	93	121	77	81	103
1936	92	91	99	98	97	91	88	93	94	77	74	102	101	75	116
1937	117	120	100	98	98	121	107	146	95	109	134	104	145	126	92
1938	104	105	101	102	102	105	113	117	107	107	80	90	95	100	110
1939	97	96	101	105	106	95	97	68	109	94	119	83	82	118	79
1940	96	95	103	101	100	95	105	93	114	80	80	60	74	116	118
1941	104	105	102	106	107	104	117	111	112	102	154	87	82	98	142
1942	113	115	103	118	124	112	122	93	109	105	96	86	102	100	252
1943	112	114	101	127	138	107	116	72	112	124	68	86	95	108	255
1944 3/	113	116	100	126	136	110	108	131	112	96	84	90	104	132	209

1/ See footnote 1, table 1.
2/ Includes some miscellaneous crops not included in separate crop groups shown.
3/ Preliminary.

Table 25.- Index numbers of gross farm production, farm output and production by groups of products, West South Central Division, 1919-44 1/
(1935-39 = 100)

Year	Gross farm production	Farm output	Product added by: Farm produced power	Product added by: All livestock	Product added by: Meat animals and animal products	Crops and pasture: Total crops and pasture 2/	Crops and pasture: Feed grains hay and pasture	Crops and pasture: Food grains	Crops and pasture: Truck crops	Crops and pasture: Vegetables except truck	Crops and pasture: Fruits and tree nuts	Crops and pasture: Sugar crops	Crops and pasture: Cotton	Crops and pasture: Tobacco 3/	Crops and pasture: Oil crops
1919	100	91	164	105	90	99	119	117	49	92	123	63	87	-	43
1920	109	101	158	102	88	111	123	101	62	93	44	78	120	-	37
1921	89	79	156	101	88	86	120	89	50	94	53	105	62	-	39
1922	89	80	153	100	87	87	100	64	60	93	81	92	86	-	32
1923	90	80	151	97	84	88	89	73	58	79	70	71	99	-	28
1924	102	95	148	98	85	103	91	90	66	60	87	57	133	-	22
1925	96	88	147	98	86	95	72	54	73	70	68	69	138	-	26
1926	118	114	146	99	87	123	101	123	83	86	92	35	161	-	34
1927	100	95	139	99	89	101	105	77	79	103	57	36	114	-	58
1928	108	105	134	98	90	111	99	106	81	96	83	52	136	-	71
1929	102	98	130	99	91	103	91	110	87	84	92	62	121	-	64
1930	94	89	125	99	92	92	81	95	96	90	59	58	107	-	45
1931	123	124	120	98	93	130	112	152	90	123	109	56	155	-	62
1932	111	110	116	102	99	113	113	94	110	122	84	64	124	-	67
1933	99	97	112	103	101	98	91	65	89	105	78	65	119	-	75
1934	77	72	110	96	93	72	71	79	81	95	89	69	67	-	58
1935	91	88	107	90	86	91	105	65	100	120	96	86	81	-	92
1936	86	84	104	97	96	83	82	73	83	90	64	97	87	-	80
1937	118	121	101	101	101	123	101	130	100	101	120	105	147	-	94
1938	103	105	96	104	105	103	110	119	106	101	95	110	94	-	110
1939	102	102	92	108	112	100	102	113	111	88	125	102	91	-	124
1940	109	112	90	105	108	110	123	112	120	93	126	65	99	-	178
1941	105	108	87	110	115	104	121	100	110	110	144	84	84	-	182
1942	114	119	83	119	128	112	119	132	118	99	128	96	96	-	474
1943	107	111	81	129	140	102	113	99	123	136	106	105	84	-	322
1944 4/	119	126	79	128	140	117	122	183	143	116	126	96	88	-	390

1/ See footnote 1, table 1. 2/ Includes some miscellaneous crops not included in separate crop groups shown.
3/ Omitted because of its little importance. 4/ Preliminary.

Table 26.- Index numbers of gross farm production, farm output and production by groups of products, Mountain Division, 1919-44 1/

(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by:		Crops and pasture									
				All livestock	Meat animals and animal products	Total crops and pasture 2/	Feed grains: hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	77	64	192	94	78	71	91	64	33	38	105	67	19	-	167
1920	92	81	186	94	80	91	107	119	37	46	83	94	32	-	389
1921	95	85	184	103	91	92	107	123	36	57	103	87	14	-	250
1922	93	83	180	98	86	92	103	122	49	69	112	60	19	-	250
1923	101	92	176	103	93	100	118	118	50	60	120	85	34	-	361
1924	94	86	169	104	95	91	108	105	50	55	79	84	52	-	778
1925	100	92	163	102	94	99	111	100	74	71	110	82	58	-	333
1926	100	93	158	103	95	98	105	121	68	68	117	89	62	-	278
1927	113	109	151	102	95	117	117	170	82	96	112	99	51	-	722
1928	113	109	145	103	97	116	117	170	82	92	115	87	75	-	694
1929	106	102	140	103	97	107	111	121	94	89	119	97	76	-	556
1930	111	108	134	105	101	113	116	118	87	120	96	118	81	-	806
1931	97	93	129	107	104	94	102	77	81	95	104	97	68	-	194
1932	101	98	123	102	99	100	109	118	70	81	107	98	45	-	333
1933	97	94	119	104	102	94	105	67	80	98	75	125	60	-	83
1934	85	82	116	102	100	79	85	70	76	73	89	71	65	-	56
1935	95	93	110	96	95	95	100	85	92	102	101	85	67	-	111
1936	92	91	105	101	101	89	95	64	89	95	92	96	95	-	28
1937	100	100	99	99	99	100	97	90	104	107	96	99	150	-	28
1938	110	112	94	100	100	113	107	153	104	98	110	120	92	-	83
1939	103	104	92	104	105	103	101	108	111	98	101	100	96	-	250
1940	110	112	92	107	109	111	108	118	104	117	112	119	102	-	444
1941	121	124	90	111	114	124	126	160	106	112	105	100	91	-	500
1942	128	132	89	119	123	131	129	161	121	136	97	111	96	-	1,222
1943	132	137	89	125	129	135	127	168	140	181	96	78	75	-	2,056
1944 3/	130	135	86	126	132	131	128	161	147	155	118	74	81	-	806

1/ See footnote 1, table 1. 2/ Includes some miscellaneous crops not included in separate crop groups shown.
3/ Preliminary.

Table 27.- Index numbers of gross farm production, farm output and production by groups of products, Pacific Division, 1919-44 1/
(1935-39 = 100)

Year	Gross farm production	Farm output	Farm produced power	Product added by:		Crops and pasture									
				All livestock	Meat animals and animal products	Total crops and pasture 2/	Feed grains, hay and pasture	Food grains	Truck crops	Vegetables except truck	Fruits and tree nuts	Sugar crops	Cotton	Tobacco	Oil crops
1919	68	62	206	76	64	66	90	94	30	39	64	39	10	—	3/
1920	66	60	200	74	62	64	89	86	36	58	60	52	15	—	
1921	66	61	189	76	66	64	93	95	32	60	57	50	6	—	
1922	70	65	183	79	70	68	90	73	42	74	71	21	5	—	
1923	76	72	174	81	72	75	96	103	44	61	82	27	12	—	
1924	65	60	170	82	74	60	79	54	45	47	65	36	17	—	
1925	72	68	163	83	76	69	93	75	51	60	68	24	27	—	
1926	77	74	154	86	80	75	88	83	56	68	83	18	29	—	
1927	81	78	145	89	85	79	90	110	60	71	84	23	20	—	
1928	83	81	137	92	88	81	90	102	66	67	87	30	37	—	
1929	84	82	129	94	91	82	90	90	76	64	86	26	57	—	
1930	88	87	121	95	93	86	97	87	82	79	89	36	58	—	
1931	85	83	114	96	94	82	87	82	85	71	86	50	39	—	
1932	88	87	109	92	91	86	102	90	89	63	88	61	28	—	
1933	85	84	106	90	89	84	93	90	79	81	84	76	47	—	
1934	86	85	106	92	91	85	90	74	93	87	83	75	57	—	31
1935	95	95	107	94	93	95	101	93	91	87	103	68	52	—	68
1936	97	96	105	100	100	96	100	103	103	93	88	92	97	—	68
1937	103	103	101	102	102	103	98	108	100	115	98	87	161	—	74
1938	103	103	96	101	102	103	99	108	103	104	106	114	93	—	86
1939	102	103	91	103	103	103	102	88	103	101	105	139	97	—	204
1940	106	106	87	104	106	106	105	89	105	121	103	150	119	—	315
1941	110	111	84	109	111	111	106	113	104	118	117	107	89	—	358
1942	115	116	81	115	118	114	118	105	115	131	113	128	88	—	389
1943	115	116	78	118	122	114	117	101	110	164	112	66	75	—	519
1944 4/	121	123	74	124	128	121	115	120	131	150	122	71	71	—	302

1/ See footnote 1, table 1.
2/ Includes some miscellaneous crops not included in separate crop groups shown.
3/ Production relatively insignificant for period 1919-33, and hence not included.
4/ Preliminary.

Table 28.- Index numbers of total crop production per acre of cropland, by geographic divisions, 1919-44 1/

(1935-39 = 100)

Year	United States	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
1919	96	87	82	88	117	81	87	112	85	66
1920	106	81	94	93	138	92	92	128	108	67
1921	90	83	74	79	122	72	82	98	106	67
1922	98	78	90	88	133	80	92	101	106	72
1923	98	88	82	89	131	88	83	99	112	81
1924	97	92	89	84	130	85	90	113	101	63
1925	100	89	86	94	128	87	101	102	108	72
1926	101	90	88	92	108	96	107	132	102	80
1927	100	88	87	84	132	93	89	103	121	84
1928	103	90	90	93	136	92	89	112	118	84
1929	100	99	85	88	124	97	103	102	103	83
1930	94	102	87	80	118	94	85	89	109	89
1931	103	102	101	100	110	99	108	129	85	82
1932	99	96	92	99	128	75	85	111	96	87
1933	89	98	91	79	97	90	97	92	88	85
1934	73	96	90	72	49	88	91	66	71	88
1935	96	95	100	99	101	98	88	89	92	95
1936	81	97	89	76	60	90	93	80	83	95
1937	111	105	104	106	110	104	118	124	102	102
1938	105	99	103	106	115	97	106	104	119	104
1939	107	104	104	114	114	111	94	103	104	104
1940	110	101	104	106	126	106	96	111	113	106
1941	113	102	102	114	135	97	106	106	122	112
1942	126	108	109	119	166	106	112	118	129	113
1943	114	121	99	107	145	102	105	105	129	111
1944 2/	123	104	103	107	159	117	112	123	127	116

1/ See footnote 1, table 1.

2/ Preliminary.

Table 29.- Index numbers of gross farm production per worker, by geographic divisions, 1919-44 1/

(1935-39 = 100)

Year	United States	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
1919	94	94	94	90	106	88	91	106	87	73
1920	97	86	96	90	112	91	89	114	98	68
1921	87	87	84	81	105	73	81	91	102	68
1922	92	85	95	87	115	78	88	90	96	71
1923	94	90	90	89	116	82	82	90	105	77
1924	93	91	94	83	114	82	85	101	98	64
1925	94	88	91	88	113	84	93	92	103	71
1926	95	89	91	86	102	91	99	110	102	76
1927	97	85	95	83	119	90	87	97	116	80
1928	99	89	94	89	123	87	87	103	114	81
1929	98	94	92	86	117	95	96	94	103	81
1930	96	97	91	83	118	93	84	90	108	84
1931	103	95	99	97	112	99	106	116	97	82
1932	101	92	97	97	123	79	89	109	102	87
1933	94	95	96	85	104	92	92	98	95	84
1934	83	96	97	83	71	88	90	78	85	86
1935	95	99	101	96	97	95	87	39	93	97
1936	86	98	95	85	74	87	92	84	89	99
1937	107	103	105	106	106	106	117	118	100	103
1938	105	98	100	104	111	100	105	105	112	102
1939	107	102	99	109	112	112	99	104	106	99
1940	110	101	100	108	117	113	100	114	116	105
1941	117	105	103	119	127	108	112	112	122	107
1942	128	110	106	125	151	117	124	121	128	110
1943	127	120	102	121	151	118	123	116	133	110
1944 2/	135	119	110	124	158	131	128	134	135	114

1/ See footnote 1, table 1.

2/ Preliminary.